Service Guide

020-100551-11

M Series

CHRISTIE

NOTICES

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WARRANTY

Products are warranted under Christie's standard limited warranty, the complete details of which are available by contacting your Christie dealer or Christie. In addition to the other limitations that may be specified in Christie's standard limited warranty and, to the extent relevant or applicable to your product, the warranty does not cover:

a. Problems or damage occurring during shipment, in either direction.

b. Projector lamps (See Christie's separate lamp program policy).

c. Problems or damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp other than a Christie lamp supplied by Christie or an authorized distributor of Christie lamps.

d. Problems or damage caused by combination of a product with non-Christie equipment, such as distribution systems, cameras, DVD players, etc., or use of a product with any non-Christie interface device.

e. Problems or damage caused by the use of any lamp, replacement part or component purchased or obtained from an unauthorized distributor of Christie lamps, replacement parts or components including, without limitation, any distributor offering Christie lamps, replacement parts or components through the internet (confirmation of authorized distributors may be obtained from Christie).

f. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightening, earthquake or other natural disaster.

g. Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.

h. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.

i. Problems or damage caused by use of a projector in the presence of an oil-based fog machine or laser-based lighting that is unrelated to the projector.

j. For LCD projectors, the warranty period specified in the warranty applies only where the LCD projector is in "normal use" which means the LCD projector is not used more than 8 hours a day, 5 days a week.

k. Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.

l. Defects caused by normal wear and tear or otherwise due to normal aging of a product.

The warranty does not apply to any product where the serial number has been removed or obliterated. The warranty also does not apply to any product sold by a reseller to an end user outside of the country where the reseller is located unless (i) Christie has an office in the country where the end user is located or (ii) the required international warranty fee has been paid.

The warranty does not obligate Christie to provide any on site warranty service at the product site location.

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

REGULATORY

The product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

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ENVIRONMENTAL

The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol  means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!

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Introduction

This document provides technical information for assisting Christie qualified technicians in the servicing of the M Series projector.

Every effort has been made to make sure the information in this document is accurate and complete. However, due to continuing research all information is subject to change without notice. Christie assumes no responsibility for omissions or inaccuracies.

Projector overview

The M Series is a family of high resolution video/graphics 3 chip 1080p HD, SXGA+, WUXGA, and WXGA projectors. These projectors are based on next-generation DLP® technology provided by Texas Instruments.

Model name	Part number
DLV-1400-DL	118-044109-XX
DLV-1920-DL	118-042107-XX
DS+6K-M	118-014106-XX
DS+10K-M	118-013105-XX
DS+14K-M	118-010113-XX
HD6K-M	118-012104-XX
HD10K-M	118-011103-XX
HD14K-M	118-019101-XX
WU7K-M	118-016108-XX
WU12K-M	118-015107-XX
WU14K-M	118-011114-XX
WX7K-M	118-018100-XX
WX10K-M	118-017109-XX
Roadster HD10K-M	118-021104-XX
Roadster HD14K-M	118-029102-XX
Roadster DS+10K-M	118-023106-XX
Roadster DS+14K-M	118-020114-XX
Roadster WU12K-M	118-025108-XX
Roadster WU14K-M	118-021115-XX

List of components

Ensure the following components were received with the projector:

- Infrared remote (includes two, 1.5V AA batteries and a communication cable for wired applications)
- Line cord
- Two M6 x 10 mm lens mount security screws
- One 5 mm lens mount security Allen key
- Warranty card
- Web registration form

Site requirements

To safely install and operate the projector, the installation location must have restricted access for authorized personnel only and meet these minimum requirements.

Environmental specifications

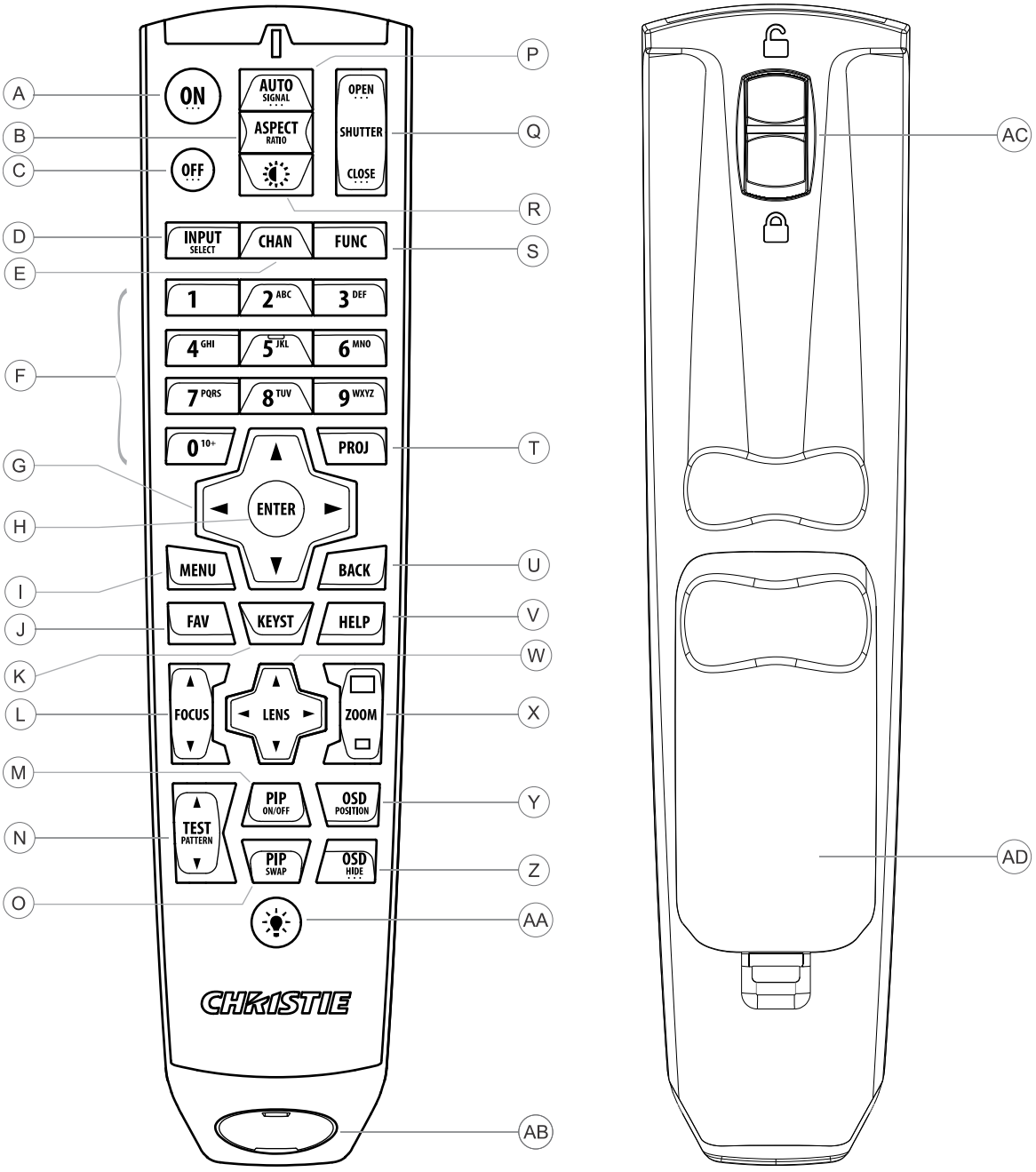
Learn the environmental specifications for the projector.

Operating temperature range	5 to 40ºC (41 to 104ºF)
Storage temperature range	-40 to 70ºC (-40 to 158ºF)
Humidity range	10% to 80%, non condensing
Operating altitude	10,000 ft. maximum

IR remote keypad

The IR remote keypad controls the projector by way of wireless communications from a battery-powered infrared (IR) transmitter.

To use the IR remote, direct the keypad toward the projector’s front or rear IR sensor and press a function key. One of the two IR sensors on the projector detect the signal and relay the commands for internal processing. The remote also offers a connector for wired connections to the projector.



Button	Description
A	Powers on the projector light source.
B	Opens the aspect ratio dialog.
C	Turns off the light source and puts the projector in standby.
D	Selects an active or inactive input on any slot.
E	Not supported.

Button	Description
F	Enter a number, such as menu, item index or value.
G	Use the arrows to navigate within a menu or to adjust settings.
H	Selects a highlighted menu item and changes or accepts a value.
I	Toggles the menus on/off.
J	Not supported.
K	Opens the keystone dialog.
L	Adjusts the lens focus.
M	Not supported.
N	Displays a test pattern.
O	Not supported.
P	Optimizes the image automatically.
Q	Opens or closes the shutter.
R	Not supported.
S	Initiates a custom action when a number is selected.
T	Selects a projector in multi-projector installations.
U	Returns to the previous menu level or exits menus if at the top level.
V	Displays context-sensitive help.
W	Arrows adjust the lens offset.
X	Adjust the lens zoom.
Y	Opens the on-screen display position menu.
Z	Shows or hides the on-screen display menus.
AA	Turns the remote backlight on.
AB	Male 3-pin XLR connector for wired option.
AC	Lock/unlock the keypad.
AD	Battery door.

Service guidelines

Review safety guidelines and information required for replacing modules.

Ordering parts

When ordering replacement parts, quote the part numbers of the items required. Quote the projector model number, serial number, and date of manufacture, as indicated on the license label.

Not all parts are available separately. In addition, some parts stocked as inventory are available only until the current supply lasts.

All part numbers are subject-to-change.

Replacing modules

To ensure you have the correct module and the projector module is replaced correctly, check module markings, parts lists, and the relevant disassembly and replacement procedures.

Components must be replaced with exact equivalents or Christie approved replacement parts. Failure to do so may result in unsafe operation.

Servicing live equipment

Only Christie accredited technicians who are knowledgeable about the hazards associated with hazardous voltage, ultraviolet exposure, and high temperatures are authorized to assemble, install, and service Christie equipment.

To make sure you remain safe when servicing energized (live) Christie equipment:

- Locate the main AC power shut off prior to servicing the equipment. This will allow you to turn the power off quickly in an emergency.
- Disconnect the projector from the communication and management network so it cannot receive commands to turn the light source on, open the shutter, and move the lens.
- Familiarize yourself with all potential safety hazards prior to servicing the equipment. This includes, but is not limited to, the location and accessibility of hazardous voltages.
- Read and understand all written procedures prior to commencing a service procedure.
- Understand and follow all local safety codes and requirements when servicing energized (live) equipment.
- Perform equipment service in a location free of obstructions and other hazards. For example, you must have an unobstructed view of the area being serviced.

Wear personal protective equipment (PPE) clothing appropriate to the service you are performing. This includes, but is not limited to, protective (electrically insulated) footwear, safety glasses, and gloves rated for the working voltage of the equipment you are servicing.

Important safeguards

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

General safety warnings

Warning! If not avoided, the following could result in death or serious injury.

- This product must be operated in an environment that meets the operating range as specified in this document.
- FIRE HAZARD! Keep hands, clothes, and all combustible material away from the concentrated light beam of the projector.
- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.
- All procedures must be performed by Christie qualified technicians.
- A minimum of two people or appropriately rated lift equipment is required to safely lift, install, or move the product.
- Do not operate the product without all of its covers in place.
- SHOCK or FIRE HAZARD! Do not operate the product with any internal part removed.
- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.
- TIP HAZARD! Stacked frames must be secured together using all locking pins.
- UV EXPOSURE! Protective UV safety glasses with side shields and Christie approved protective safety clothing must be worn when performing optical adjustments or servicing the product.
- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.
- Always provide proper ventilation for the product to prevent overheating.

Caution! If not avoided, the following could result in minor or moderate injury.

- Do not operate the product without a lens installed.
- Do not operate the product without the filter installed.
- Use only high efficiency Christie approved filters.
- The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational UV exposure for an 8-hour day to be less than 0.1 microwatts per square centimeters of effective UV radiation. A workplace evaluation is advised to assure employees are not exposed to cumulative radiation levels exceeding the government guidelines for your area. Be aware that some medications are known to increase sensitivity to UV radiation.

Notice. If not avoided, the following could result in property damage.

- Always use a lens plug when installing or moving the product. This prevents contaminants from entering the product.
- Do not insert the lens into the product at an angle. This can damage the lens and the optical components inside the product.
- Always place the lens cap onto the lens when moving the projector to avoid scratching the lens.
- Remove the lens cap before turning the product on to avoid damaging the lens.

AC/Power precautions

Warning! If not avoided, the following could result in death or serious injury.

- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.
- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- SHOCK HAZARD! Power supply uses double pole/neutral fusing. Disconnect all power sources before opening the product.
- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.
- Never compromise the ground or earth connection of the product.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- SHOCK HAZARD! The AC power cord must be inserted into an outlet with grounding.

Lamp precautions

Lamps used in the projector must be handled with caution. Lamps can cause serious personal injury if dropped or mishandled.

Warning! If not avoided, the following could result in death or serious injury.

- EXPLOSION HAZARD! Allow sufficient time for the lamp to cool down before powering down the product, disconnecting it from AC, and opening the lamp door.
- Do not open the lamp door while the lamp is on.
- Improper installation of the lamp can damage the projector.
- Do not look directly into the lens when the light source is on. The extremely high brightness can cause permanent eye damage.
- Dispose of bare bulb with packaging according to local area regulations.

Related documentation

Additional information on the projector is available in the following documents.

- *M Series Installation and Setup Guide (P/N: 020-101941-XX)*
- *M Series User Guide (P/N: 020-101948-XX)*

- *M Series Product Safety Guide (P/N: 020-102690-XX)*
- *M Series Serial API Commands Technical Reference (P/N: 020-100224-XX)*

Maintenance and cleaning

Maintain the cleanliness of all internal components during any service procedure. All of the projector optics must remain free of contaminants to perform at the level specified. Even a small amount of dust or a fingerprint may degrade the image or cause a noticeable reduction of brightness.

Always power down and disconnect/disengage all power sources to the projector before servicing or cleaning the lens or before any of the projection head covers or doors are loosened and removed. If the seal is broken while the intake fans are still operating, internal components are immediately vulnerable to contamination from inbound particles.

Notice. If not avoided, the following could result in property damage.

- Avoid touching optical elements.
- Always wear clean, lint-free gloves when handling the product.

Guidelines for cleaning

Use the following guidelines when cleaning components.

Component	Preventative measures	How to clean
Lamp	Wear protective gear approved by Christie, and handle by the lamp housing only. Never grip the glass portion of the lamp. Fingerprints reduce output quality and shorten lamp life.	Remove any contaminants with pure isopropyl alcohol and a clean lint-free cloth.
Illumination Optics System	Never touch or blow on exposed components. Wear gloves (supplied).	Use ionized pneumatic guns only. Keep imaging components and yourself grounded at all times.
Integrator	Never disassemble the integrator module.	Blow off particles with clean, dry de-ionized air.
Illumination system, internal lenses/ prisms	Never touch or blow on interior components. Wear gloves (supplied). Normally the internal parts should not be accessed.	Blow off particles with clean, dry de-ionized air. If necessary, wipe in a single direction with a clean high quality optical cloth.
Light engine components	Never touch or blow on components. Wear gloves (supplied).	Blow off particles with clean, dry de-ionized air. If necessary, use a Q-tip with pure isopropyl alcohol on the glass surface. Never touch the imaging panels. The green imaging panel also has glass behind it.

Component	Preventative measures	How to clean
Light engine, DMD panels	Never touch or blow on the panels.	Blow off particles with clean, dry de-ionized air.
Projection lens	To avoid the risk of scratching the lens, only clean the lenses if absolutely necessary. A small amount of dust on the lenses has little effect on picture quality. The projection lens should be free of dust and fingerprints. If the lenses must be cleaned, use a dry, soft cotton cloth and gently rub in a circular motion.	Use filtered compressed air to blow out dust and a clean lint-free cloth.

Maintaining the cooling system

The high-intensity lamps and electronics rely on a variety of components to reduce internal operating temperatures.

Regular checkup and maintenance of the entire cooling system is critical to prevent overheating and sudden projector failure and helps make sure reliable operation of all projector components over time.

Ventilation

Use the following guidelines when maintaining ventilation.

- Do not place the projector near a heat source or in an enclosure, unless proper ventilation is provided.
- Do not insert objects into the ventilation openings of the projector.
- Do not spill liquids of any kind into the projector. Should an accidental spill occur, immediately unplug the projector and have it serviced by a qualified service technician.

Power supplies

Power supplies are not serviceable. Never open or attempt to service a power supply. Contact Christie for a replacement.

Power cord and attachments

Observe the following safety and warning guidelines when maintaining the power cord and attachments.

Warning! If not avoided, the following could result in death or serious injury.

- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.
- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- SHOCK HAZARD! The AC power cord must be inserted into an outlet with grounding.
- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.

Caution! If not avoided, the following could result in minor or moderate injury.

- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.

Maintaining optics

Use the following guidelines when maintaining optics.

Warning! If not avoided, the following could result in death or serious injury.

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.

Cleaning optics (excluding lens)

Unnecessary cleaning of optics can be more harmful than helpful by increasing the risk of damage to delicate coatings and surfaces.

Only clean optics when dust, dirt, oil, fingerprints or other marks are obvious or are the cause of performance problems. Maintenance of optical components requires a qualified service technician. Inspect exposed optical surfaces periodically in a clean, dust-free environment using a flashlight. Always wear appropriate gloves when servicing any optical surfaces.

Supplies for cleaning optical surfaces

- Soft camel-hair brush
- Dust-free blower: Filtered dry nitrogen blown through an anti-static nozzle
- Dust-free lens tissue, such as: Optowipes (18LAB022), Kim Wipes, or equivalent
- For lens only: Lens cleaning solution
- Cotton swabs with wooden stems only
- Lens cleaning cloth/microfiber

Cleaning dust from the lens

Check the lens periodically. A small amount of dust or dirt on the lens has minimal effect on image quality. To avoid the risk of scratching the lens, clean only if absolutely necessary.

1. Brush most of the dust away with a camel-hair brush and/or blow dust away with a dust-free blower.
2. Fold a microfiber cloth smooth and gently wipe dust particles from the lens. Wipe evenly with the smooth portion of the cloth that has no folds or creases. Do not apply pressure with your fingers - use the tension in the folded cloth itself to collect dust.
3. If significant dust is still bound to the surface, dampen a clean microfiber cloth with coated optics cleaner solution (damp, not dripping). Wipe gently until clean.

Cleaning fingerprints, smudges, or oil from the lens

Check the lens periodically. A small amount of dust or dirt on the lens has minimal effect on image quality. To avoid the risk of scratching the lens, clean only if absolutely necessary.

1. Brush away most of the dust with a camel-hair brush and/or blow away using a dust-free blower.
2. Roll a lens tissue around a swab and soak it in coated optics cleaner solution. Tissue should be damp, but not dripping.
3. Gently wipe the surface with a figure-8 motion. Repeat this motion until the blemish is removed.

Service setups

Understand the special internal hardware and software adjustments and related details that may require the attention of a qualified service technician, whether done periodically or after a specific module replacement.

Optical adjustments are not considered maintenance. The lamps are turned on during optical adjustments and UV emissions are present.

Aligning the boresight

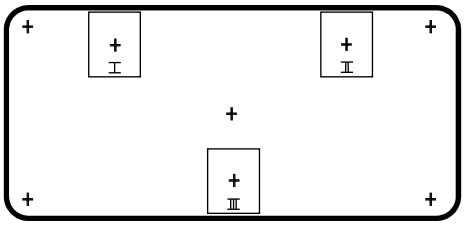
The boresight adjustment balances the tilt of the lens mount to compensate for screen-to-projector tilt.

1. Display the boresight test pattern.
   a) On the remote keypad, press **Test**.

      On the built-in keypad, press the soft key that displays Test on the display panel

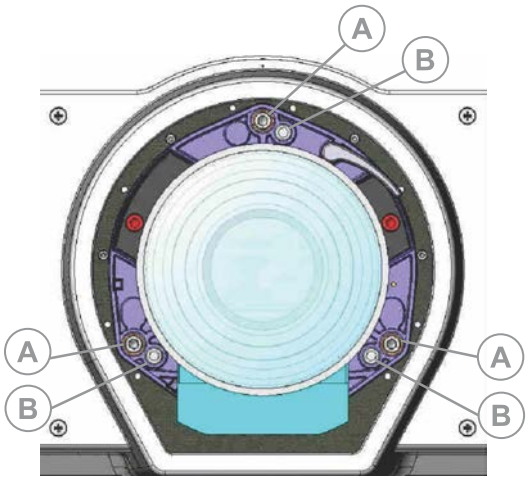
   b) To cycle to Boresight, press the **Up Arrow** key.

   c) Press **Enter**.



2. Focus the image on cross-hair image **I**.
3. Evaluate the focus on cross-hair image **II** and **III**.
   - If all three images are in focus, no further action is required.
   - If boresight is required, continue to step 4.

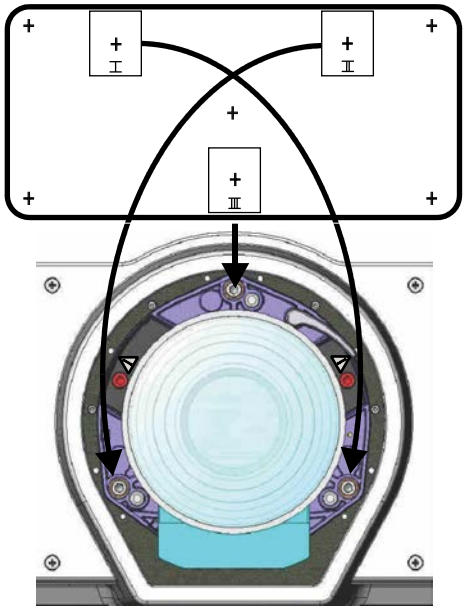
   The adjustment screws (A) on the lens mount affects the corresponding cross-hairs on the test pattern.



4. To loosen the three setscrews (B) on the lens mount, use a 5 mm hex driver.

   The setscrews must be backed out several turns to avoid contact with the inner lens mount plate.

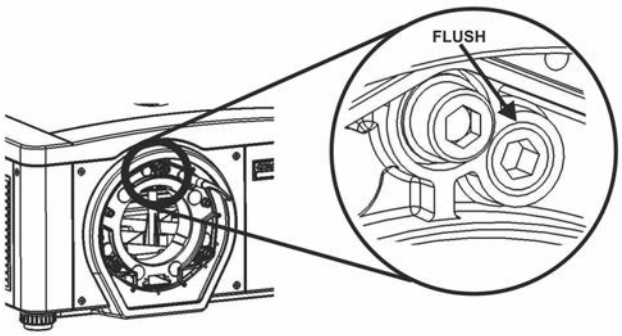
5. To fine tune the focus of cross-hair pattern **I**, adjust the appropriate adjustment screw (A) until the cross-hair image is in focus with minimal flare.



6. To fine tune cross-hair pattern **II**, adjust the appropriate adjustment screw until the cross-hair image is in focus with minimal flare.
7. To fine tune cross-hair pattern **III**, adjust the appropriate adjustment screw until the cross-hair image is in focus with minimal flare.
8. Repeat step 5 to 7 as required until all three cross-hair patterns are in equal sharp focus.
   - If the boresight is acceptable, proceed with step 11.
   - If the boresight does not appear to be converging to an acceptable level of image quality, or if the lens does not focus over the correct range of throw distances, proceed with step 9.

9. To approximately recover the original factory boresight, position the three setscrews flush with the front face of the lens mount plate and in contact with the inner lens mount plate.

   This may require adjusting both setscrews and adjustment screws.



10. If further action is required, repeat steps 2 to 9.
11. Lock the setscrews, and re-check the boresight quality.

    Tighten the setscrews to 2.1 Nm (18 in-lb) to ensure they do not shift.

Adjusting convergence

Normally the red, green and blue colors should overlap precisely to form pure white lines throughout the image. A convergence problem is evident when one or more projected colors appears out of alignment.

Convergence toolkit required: 003-000078-XX

Warning! If not avoided, the following could result in death or serious injury.

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- UV EXPOSURE! Protective UV safety glasses with side shields and Christie approved protective safety clothing must be worn when performing optical adjustments or servicing the product.

Removing the light engine cover

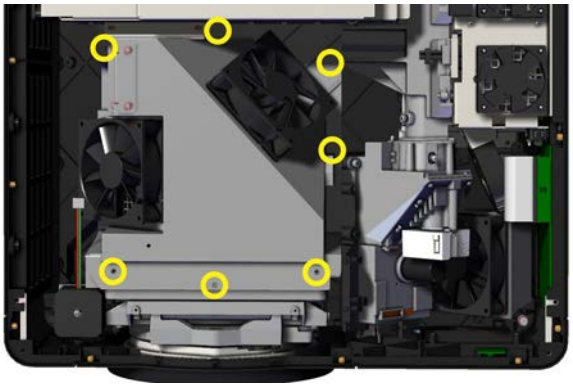
Complete the following procedure to remove the light engine cover.

Before removing the light engine cover to adjust convergence:

- Set the projector to operate in a single lamp mode
- Reduce to minimum lamp power

1. *Remove the top cover* (on page 45).
2. *Remove the light engine intake duct* (on page 81).
3. *Remove the card cage lid* (on page 59).
4. *Remove the bridge* (on page 60).
5. Remove the remote temperature sensor module (RTSM) #3 harness from the two clips along the card cage.

   The fans are operational and can cause injury. Use extreme caution.
6. Remove seven screws from the light engine cover.



7. Remove the top portion of light engine cover.
   Use caution when removing, the RTSM #3 temperature sensor is attached to the cover.
8. Place the cover on the card cage plate ensuring that nothing can get caught on the moving fan blades and the RTSM#3 on the intake duct is away from the lamps.

Adjusting convergence

When adjusting convergence, never attempt to adjust the red DMD. Red is used as the reference color. Green is adjusted first in relation to the red. Blue is adjusted second in relation to the green.

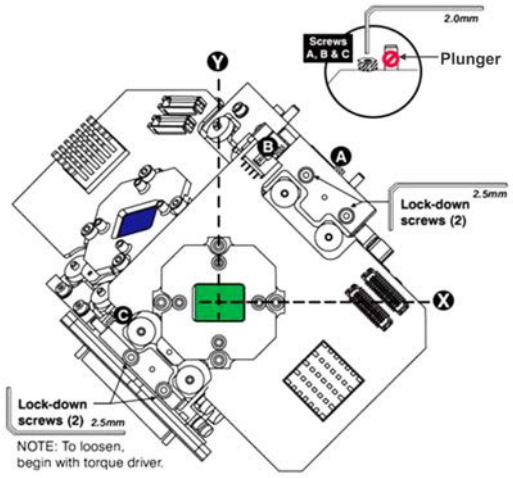
Note the following when adjusting convergence:

- Boresight must be correct before adjusting convergence.
- Do not adjust the plungers.
- Convergence adjustment screws are sensitive. A small rotation can cause a large convergence shift.

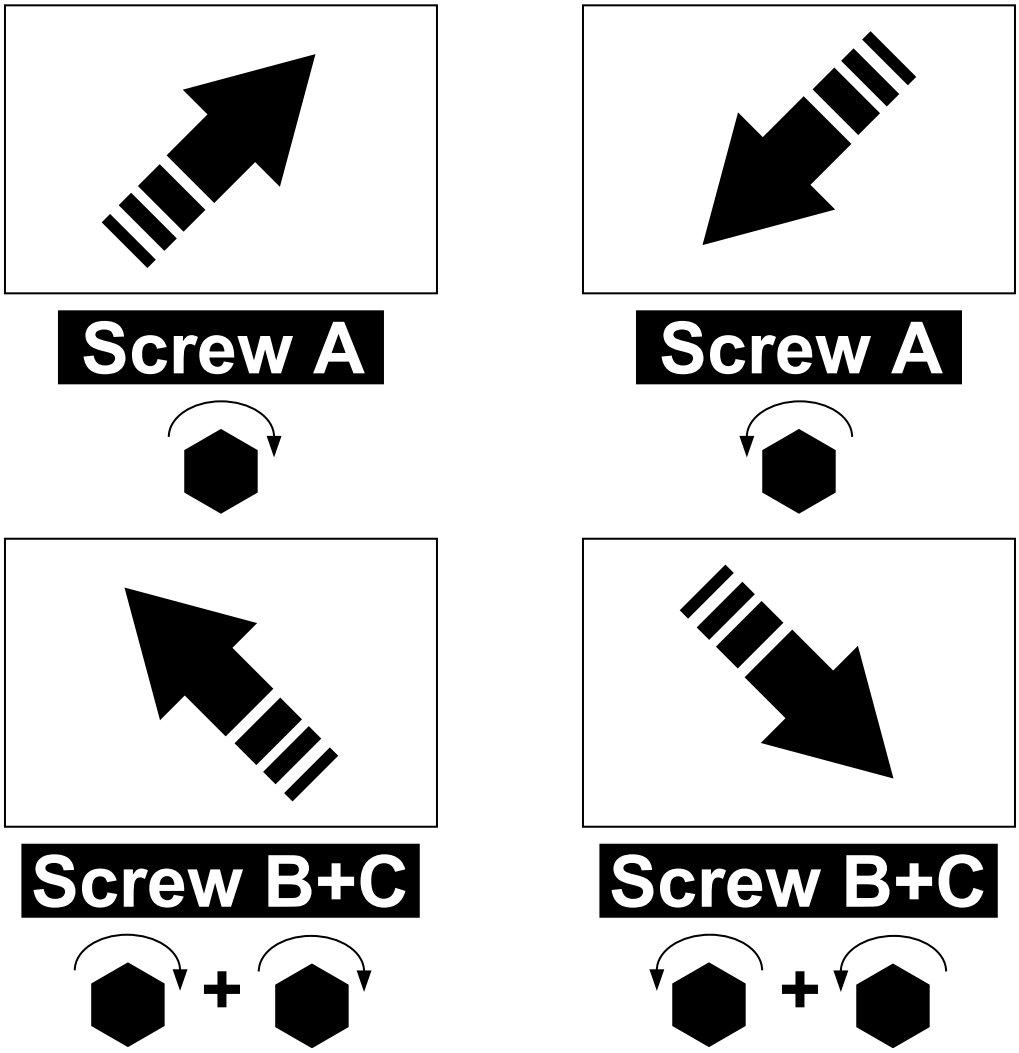
Warning! If not avoided, the following could result in death or serious injury.

- UV EXPOSURE! Protective UV safety glasses with side shields and Christie approved protective safety clothing must be worn when performing optical adjustments or servicing the product.

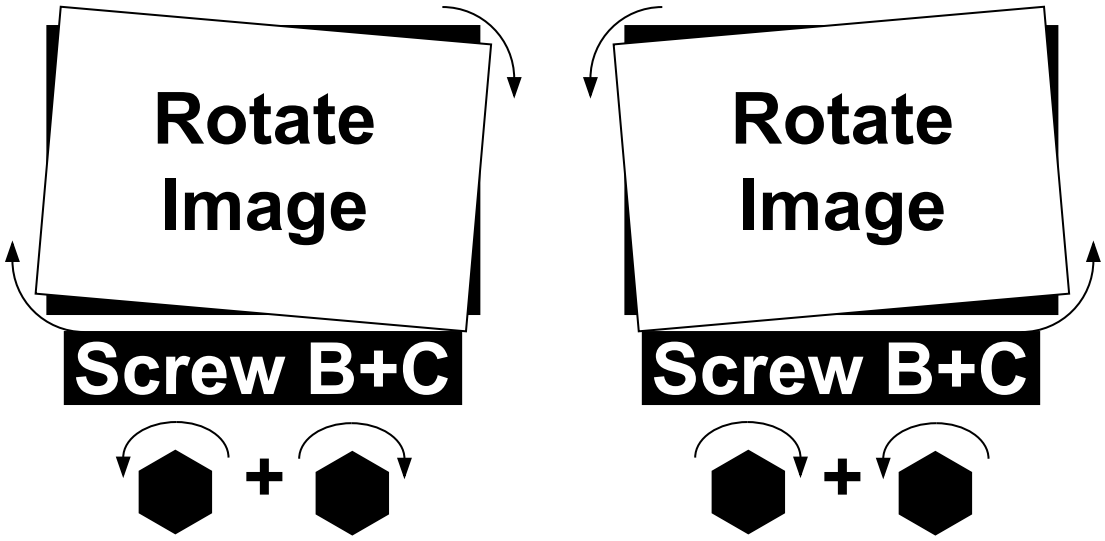
1. Power on the projector and wait 20 minutes for it to warm up.
2. To unlock the formatter, loosen the four lock-down screws.



3. Adjust screw A and B+C to center the color in the cross-hair at the center of the screen.



4. Evaluate the sides for rotation.
5. Adjust the image rotation using screws B+C.
   The center convergence may shift slightly.



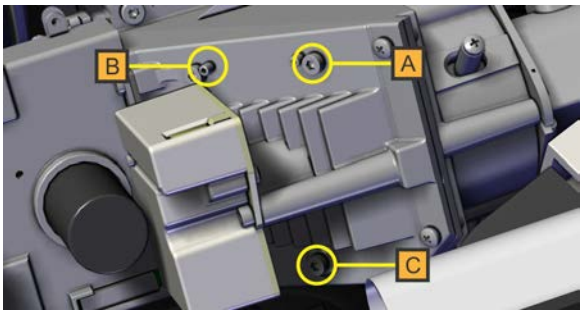
6. Repeat steps 3 to 5 until proper convergence is observed.
7. Gradually tighten the four lock-down screws to lock the formatter.
   - Torque to 8 in.lb. when using a straight driver.
   - Torque to 16 in.lb. when using an angled driver.

   If the convergence shifts when locking down the formatter:
   a. Evaluate the amount of shift with the formatter locked.
   b. To compensate for the lock-down shift, unlock the formatter board and shift the color by the same distance as the lock-down shift, except in the opposite direction.
   c. Gradually tighten the four lock-down screws to lock the formatter.
   d. If convergence is still necessary, repeat the previous steps.
8. For the blue formatter, repeat steps 2 to 7.

Adjusting the fold mirror

One of the two fold mirrors has the adjustment screws located under the top cover. The cover must be removed to adjust the mirror. The other fold mirror is located on the bottom of the projector and does not have any adjustment screws.

If a corner or edge of the image is missing (after prime lens offset is ruled out), this may indicate the fold mirror has become misaligned with the rest of the optical system, resulting in cropping of the projected image.



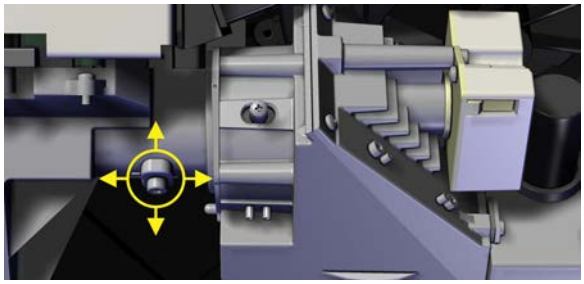
A	Capscrew (1 of 2)
B	Setscrew (1 of 2)
C	Pivot screw

1. *Remove the top cover* (on page 45).
2. Unlock the two setscrews (B).
3. To make adjustments turn the pivot screw (C) 90-180 degrees.
4. Adjust both capscrews to pivot the fold mirror back and forth.

Adjusting the integrator tilt

Complete the following procedure to adjust integrator tilt.

1. *Remove the top cover* (on page 45).
2. Loosen the screw.
3. Adjust the integrator tilt by moving the hex driver up, down, left, or right.

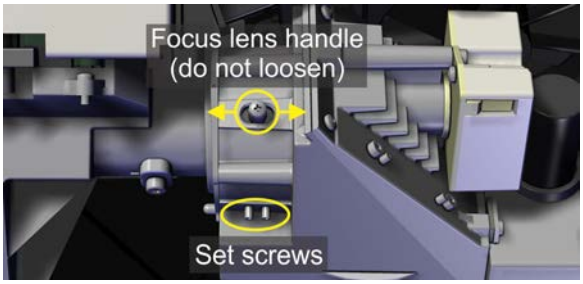


4. Tighten the screw once you achieved adjustment.

Adjusting the integrator focus lens

Complete the following procedure to adjust the integrator focus lens.

1. *Remove the top cover* (on page 45).
2. Loosen the two setscrews.
   Do not loosen the focus lens handle.



3. Adjust the focus lens by moving the focus lens handle forward or back.
4. Tighten the two setscrews.

Troubleshooting

To use this section effectively, find the subheading that best describes the problem and follow the recommendations in the order listed.

If replacing a module is recommended and the symptom persists, remove the newly replaced module and reinstall the original. Proceed to the next recommendation. This practice makes sure that modules are not replaced unnecessarily.

Troubleshooting guidelines

Use the provided guidelines before completing troubleshooting procedures.

Read *Service guidelines* (on page 11) and understand all the warnings and precautions that must be observed at all times to diagnose and service the projector.

Consider the following before suspecting a performance problem:

- Make sure the projector is plugged in and the correct voltage is available for the projector model. On some models, the projector goes to standby with less than the rated voltage but does not strike the lamp unless the rated AC voltage is available.

  Make sure the power switch is in the on position.
- *Check for a normal power up sequence* (on page 27).
- Check the status display window for any error codes present. Correct these if possible.
- Check source reliability. Switch sources if possible.
- Use RS232 serial communications to communicate with the projector during diagnosis.
- Make sure cables are connected and not damaged.

Help with troubleshooting

If a performance problem still exists after referring to the chart and replacing the recommended modules, contact Christie technical support for additional help.

To aid in service and warranty claims, Christie electronically tracks the serial numbers of all modules within a projector. On the warranty card, record the serial number of the new module installed, as well as the serial number of the defective module. Return the completed warranty card and the defective module to Christie.

Technical support

Technical support for Christie products is available at:

- North and South America: +1-800-221-8025 or Support.Americas@christiedigital.com
- Europe, Middle East, and Africa: +44 (0) 1189 778111 or Support.EMEA@christiedigital.com
- Asia Pacific: +65 6877-8737 or Support.APAC@christiedigital.com

Normal power up (LCD keypad and rear status LEDs)

Understand the normal power up sequence.

The color of the keypad key indicates the state of the key:

- **Amber**—Functionality is available which affects the displayed image of the projector.
- **Blue**—Functionality is available and relevant to the built-in LCD only and does not affect the displayed image of the projector.
- **Off**—The key is disabled in the current context.

Once the projector is in standby mode, use the down arrow on the keypad to interact with the projector.

Time (approximate)	Rear status LEDs				LCD display
	Lamp-1	COMM	Status	Shutter	
0 seconds	Amber	Amber	Amber	Amber	Please Wait
30 seconds	Off	Off	Off	Off	Please Wait
40 seconds	Off	Off	Off	Off	Initializing projector
1 minute and 40 seconds to 1 minute and 50 seconds	Off	Off	Off	Off	Initializing projector
1 minute and 50 seconds to 1 minute and 55 seconds	Off	Off	Amber	Amber	Standby mode Press and hold Power to turn on projector

Temperature sensors

The following sections provide details about the temperature sensors.

Interface temperature sensors

ID	Interface	Location
2	I2C	Projector exhaust temperature
3	I2C	Light Engine intake temperature
4	I2C	Light Engine exhaust temperature
7	RS232	Located in lamp driver 1 and accessed through the driver's serial port
8	RS232	Located in lamp driver 2 and accessed through the driver's serial port
9	Single wire	Located on the panel driver and monitors the board temperature
13	Single wire	Located on slot 1 option card and monitors option card temperature
14	Single wire	Located on slot 2 option card and monitors option card temperature
15	Single wire	Located on slot 3 option card and monitors option card temperature
16	Single wire	Located on slot 4 option card and monitors option card temperature

Fan temperature sensors

ID	Location
2	Card cage cooling
3	Lamp 2 blower
4	Lamp house exhaust
5	Light engine intake
6	Light engine exhaust
7	Lamp driver cooling
8	Lamp 1 blower
9	Cold mirror cooling

Obtaining an error log

For the interrogator to successfully retrieve diagnostic files, the projector must remain in its failed state while the interrogator is operating. Always run the interrogator before power cycling the projector; otherwise, important diagnostic files become unusable.

1. Open a web browser and type the IP address of the projector into the address bar.

2. Select the appropriate language from the language list, located in the upper left-hand corner of the WebUI.
3. Sign into the WebUI using the administrator user name and password (case-sensitive).
4. Select the **Admin** tab.
5. On the right side panel, click **Interrogate**.
6. Once the download is complete, click **Save**.

   If the file download window does not appear, see *Resolving problems while saving an error log* (on page 29) for troubleshooting options.

Resolving problems while saving an error log

If Internet Explorer is set to automatically open or save files without a prompt, or if any popup blocker has been enabled, the file may not be saved.

Disabling the popup blocker

Complete the following procedure to disable the popup blocker.

1. In Internet Explorer, navigate to **Tools** > **Internet Options** > **Privacy**.
2. Clear the **Turn On Pop-up Blocker** option.
3. Click **OK**.

Enabling the File Download prompt

Complete the following procedure to enable the File Download prompt.

1. In Internet Explorer, navigate to **Tools** > **Internet Options**.
2. Switch to the **Security** tab.
3. Click **Custom level**.
4. Scroll down the list until you see **Downloads**.
5. Enable the **Automatic prompting for file downloads** and **File Download** options.
6. Click **OK.**
7. Once the warning window displays, click **OK**.

Submitting an error log for analysis

The interrogator log is saved as an encrypted file and must be sent to Christie technical support for analysis.

1. Attach the log file to an email.
2. Add the following:
   - Your name
   - Company name
   - Telephone number

- Email address
- A detailed description of the error
- A photo of the error (optional)

3. Send the email toChristie technical support.

LCD error messages

To receive more information about an error, send the following serial command, where x is the first number in the error message: `HLT+LSOL?x`

For example, if the LCD displays the following:

```
                    Error Alarm             1/1
System Health
3:11 (Critical) Thermal Det: 4
```

Retrieve more information with the HLT+LSOL?3 serial command. The projector responds with:

```
HLT+LSOL!003 "Failed to assign I2C address to Thermal Sensor. Verify Sensor
Configuration File. Detection Failure for Thermal Sensor. Check cables and
Configuration File.
```

For more information about the HLT command, see the *M Series Serial API Commands Technical Reference (P/N: 020-100224-XX)* available on the Christie website.

LCD error message list

If the projector displays an error message not documented below or you cannot correct the issue using the recommended procedure, contact Christie technical support.

Error message	Conditions	
Blue Bias	Blue bias under voltage	Replace the light engine.
Blue Comm	Blue satellite communication error	• Check the blue satellite communication cables for loose connection. • Cycle AC power.
Blue Offset	Blue offset under voltage	Replace the light engine.
Blue Reset	Blue reset under voltage	Replace the light engine.
Blue Therm	Blue DAD thermal shutdown	Allow the projector to cool down.
Boot Mode	Engine unexpectedly in boot mode with limited functionality	• Re-install the projector software. • Cycle AC power. • Replace the panel driver.
DMD Mismatch	One DMD may be of a different resolution	Replace the light engine.

Error message	Conditions	
Driver Over-Temp	Electronics card cage is running hotter than expected	• Verify that the intake fan #7 and projector exhaust are unobstructed. • If the issue is not resolved, replace the lamp driver.
Driver Voltage Low	Unexpected error from the lamp driver	Replace the lamp driver.
Driver Voltage High	Voltage going to the lamp is higher than expected, usually due to a missing or broken lamp	• Replace the lamp. • If the issue is not resolved, replace the lamp driver.
Driver DC Drive Err	Unexpected error from the lamp driver	Replace the lamp driver.
Driver Low Input Voltage	Unexpected error from the lamp driver	Replace the lamp driver.
Driver Voltage Surge	Unexpected error from the lamp driver	Replace the lamp driver.
Driver Thermal Sensor Err	Unexpected error from the lamp driver	Replace the lamp driver.
Driver Mismatch	Two different lamp drivers are in the projector	Ensure both lamp drivers are of the same type and revision
E-Shutdown	Emergency shutdown has occurred to protect the projector from damage	Check and resolve the most recent critical status message shown when the projector reaches standby.
Eng Config	Engine configuration failed	Re-install the projector software.
Eng Init	Critical engine initialization failure	• Re-install the projector software. • Cycle AC power. • Replace the panel driver.
Eng Install	Critical engine installation failure	• Re-install the projector software. • Cycle AC power. • Replace the panel driver.
Eng OpStatu	Engine failed operational status check	Replace the panel driver.
Eng Status	Engine failed full status check	Replace the panel driver.
EngVErr File: <number>	Engine firmware or software version file conflict	Re-install the projector software.
Engine Comm	Engine communication failure	Replace the panel driver.

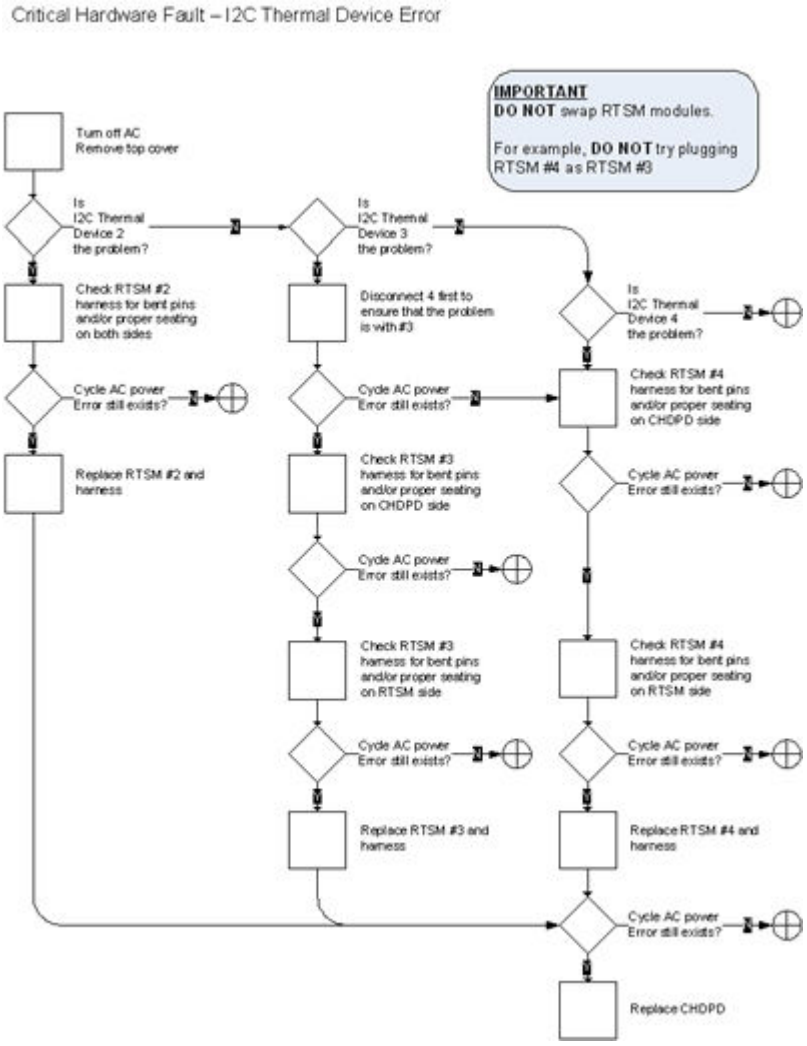
Error message	Conditions	
Engine Mode	Engine failed to enter normal operation	Replace the panel driver.
Fan Install	Failed to initialize the projector fans	• Check cables for loose connections. • Re-install the projector software.
Fan Param: <number>	Failed to read the fan configuration parameter	Re-install the projector software.
Fan Seq: <number>	Thermal device is not recognized	Re-install the projector software.
Fan therm: <number>	Thermal operations failed on a fan	• Check cables for loose connections. • Replace the fan.
Green Bias	Green bias under voltage	Replace the light engine.
Green Comm	Green satellite communication error	• Check the green satellite communication cables for loose connection. • Cycle AC power.
Green Offset	Green offset under voltage	Replace the light engine.
Green Reset	Green reset under voltage	Replace the light engine.
Green Therm	Green DAD thermal shutdown	Allow the projector to cool down.
HW Install	Critical hardware installation failure	• Check engine communication cables for loose connections. • Check thermal sensor cables for loose connections. • Check fan cables for loose connections.
LCDVErr File: <number>	LCD firmware file version conflict	• Cycle AC power. • Replace the keypad.
LED Status	LED status display is not detected	Check rear status panel harness for loose connection.
LampVErr File: <number>	Lamp software file version conflict	• Cycle AC power. • Replace the panel driver.
LiteLoc Cal Failure	LiteLoc calibration failure	• Re-calibrate LiteLoc. • Replace lamps.
Red Bias	Red bias under voltage	Replace the light engine.

Error message	Conditions	
Red Comm	Red satellite communication error	• Check the red satellite communication cables for loose connection. • Cycle AC power.
Red Offset	Red offset under voltage	Replace the light engine.
Red Reset	Red reset under voltage	Replace the light engine.
Red Therm	Red DAD thermal shutdown	Allow the projector to cool down.
Shutter	Shutter not detected	Check cables for loose connections.
TI Blue FW	Failed to load blue TI firmware	• Check the blue satellite communication cables for loose connection. • Replace the blue satellite communication cable. • Replace the light engine.
TI Blue Sys	Blue channel TI system failure	• Check the blue satellite communication cables for loose connection. • Replace the blue satellite communication cable. • Replace the light engine.
TI Green FW	Failed to load Green TI firmware	• Check the green satellite communication cables for loose connection. • Replace the green satellite communication cable. • Replace the light engine.
TI Green Sys	Green channel TI system failure	• Check the green satellite communication cables for loose connection. • Replace the green satellite communication cable. • Replace the light engine.
TI Main Sys	Main TI system failure	Replace the panel driver.
TI Red FW	Failed to load red TI firmware	• Check the red satellite communication cables for loose connection. • Replace the red satellite communication cable. • Replace the light engine.

Error message	Conditions	
TI Red Sys	Red channel TI system failure	• Check the red satellite communication cables for loose connection. • Replace the red satellite communication cable. • Replace the light engine.
Thermal Def	Configuration file error	• Check cables for loose connections. • Re-install the projector software.
Thermal Det: <number>	Thermal sensor detection failure	• If sensor is attached to a harness, check for loose connection. • If sensor is attached to a board, replace the board.
Thermal Dev	Fan failed to initialize	• Re-install the projector software. • Replace the panel driver.
Thermal: <number	Configuration file error	• Re-install the projector software. • Replace the panel driver.
Ver Data N/A	Configuration file error	• Re-install the projector software. • Replace the panel driver.
YNF	Yellow notch filter is not detected	Check cables for loose connections.

Critical Hardware Fault errors

The following details the Critical Hardware Fault - 12C Thermal Device errors.



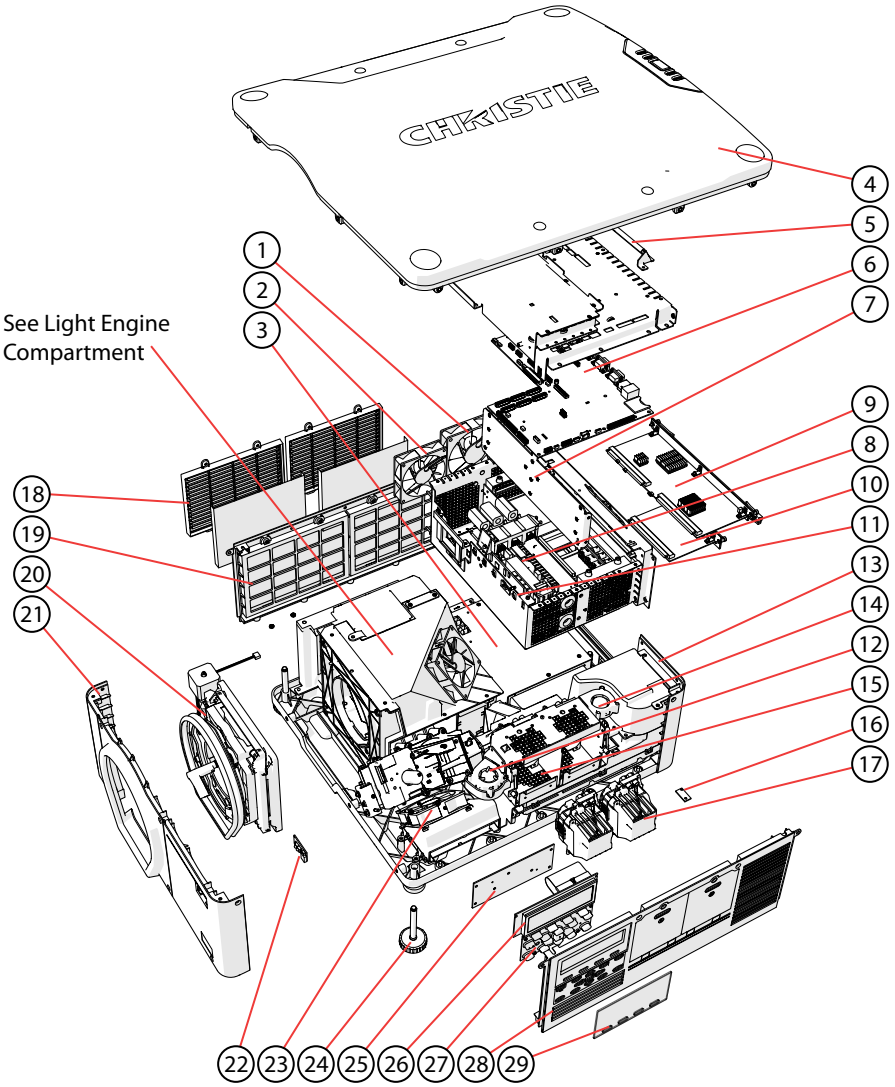
Parts and module replacement

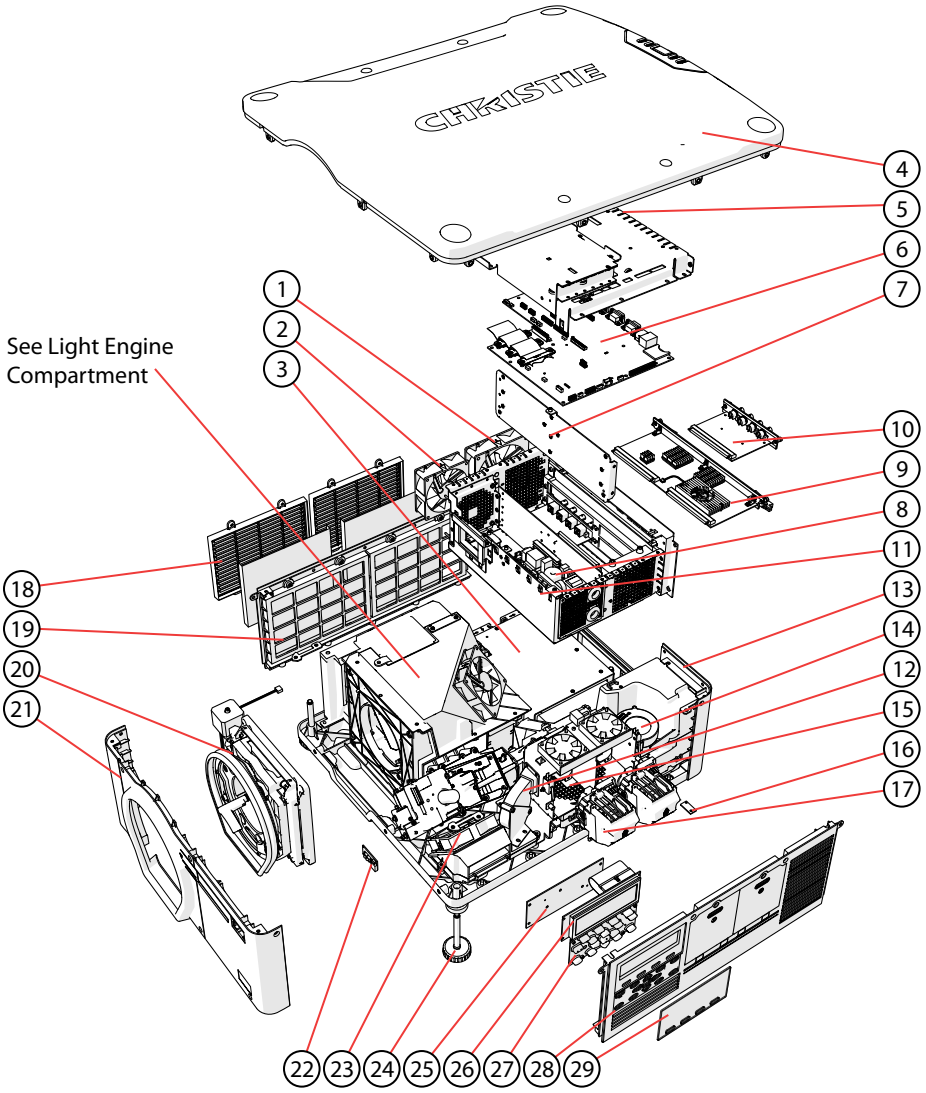
When ordering replacement parts, provide the following information found on the product license label:

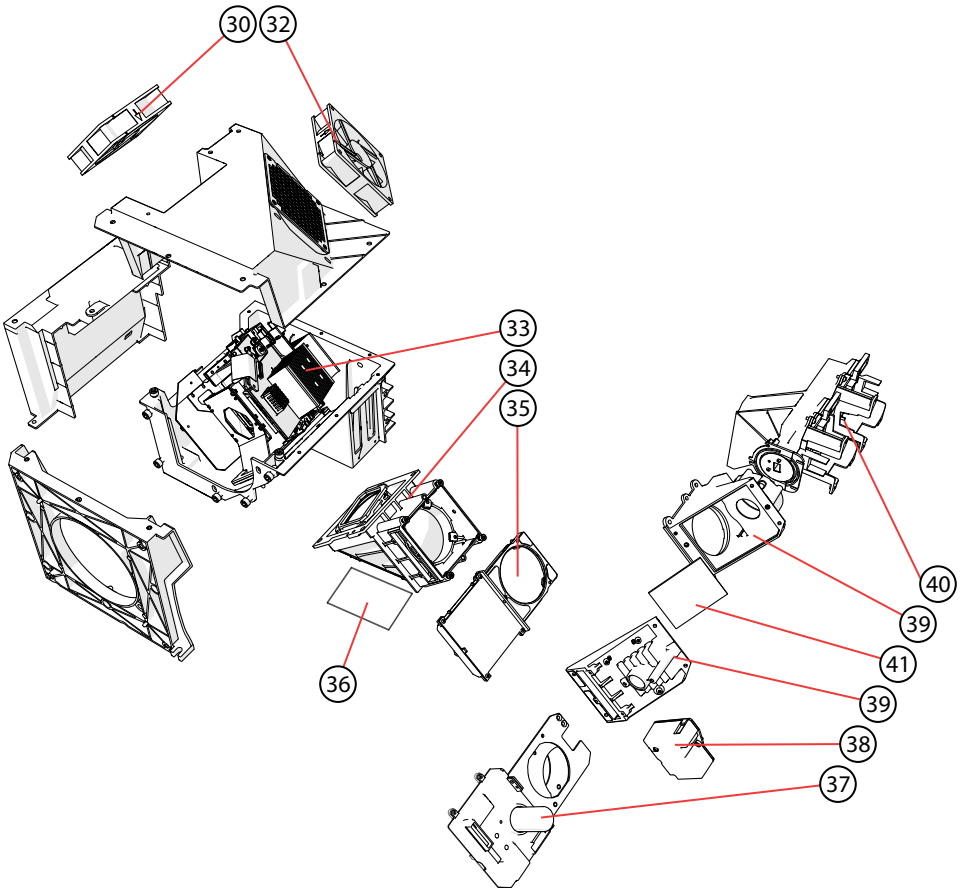
- Projector Model
- Projector Serial Number
- Manufacture Date

Projector components

The following diagrams provide an exploded view of the projector components.







Index of parts and modules

The following table lists the parts and modules for M Series.

Exploded view #	Description	Part number
Fan assemblies		
—	Fan #1 (lamp fan)	003-111698-XX
1	Fan #2 (large electronics intake	003-121114-XX
14	Fan #3 (lamp #2 blower)	003-110854-XX
	Fan #3 (lamp #2 blower) - 450W	003-111697-XX
15	Fan #4 (lamp exhaust)	003-121114-XX
30	Fan #5 (intake on light engine module)	003-100730-XX
	Fan #5 (intake on light engine module) - 450W	003-111699-XX
32	Fan #6 (exhaust on light engine module)	003-100730-XX
	Fan #6 (exhaust on light engine module) - 450W	003-111699-XX

Exploded view #	Description	Part number
2	Fan #7 (small electronics intake)	003-100730-XX
	Fan #7 (small electronics intake) - 450W	003-111699-XX
12	Fan #8 (lamp #1 blower)	003-110854-XX
	Fan #8 (lamp #1 blower) - 450W	003-111697-XX
23	Fan #9 (side exhaust-by keypad PCB)	003-100730-XX
Power supplies		
8	Lamp driver - 200W	003-120330-XX
	Lamp driver - 350W	003-100272-XX
	Lamp driver - 450W	003-120554-XX
3	Power supply - 1100W	003-100256-XX
	Power supply - 1400W	003-120550-XX
—	Power supply- 1200W	003-120623-XX
—	Ignitor harness - 450W	003-120655-XX
Lamp and filter assemblies		
—	Dust filters	118-100104-X
—	Fog filters	118-100105-XX
—	Door filter—black	003-005432-XX
17	Lamp - 200W	003-100856-XX
	Lamp - 350W	003-100857-XX
	Lamp - 450W	003-102385-XX
—	Lamp duct - 450W	003-005711-XX
Light engine		
—	Light engine handle	003-002389-XX
33	HD light engine	003-100864-XX
	SXGA+ light engine	003-100865-XX
	WUXGA light engine	003-101268-XX
	WXGA light engine	003-101326-XX
—	Light engine harness	003-003062-XX
Optical assemblies		
37	Dynamic iris assembly	003-101089-XX
40	1080p integrator assembly	003-002391-XX
	WUXGA integrator assembly	003-101408-XX
	WXGA integrator assembly	003-101409-XX

Exploded view #	Description	Part number
	SXGA+ integrator assembly	003-002392-XX
36	Fold mirror—large (under engine housing)	003-002283-XX
41	Fold mirror—small (on light tube)	003-002284-XX
34	Front optical housing	003-002306-XX
38	Light sensor module	003-002542-XX
—	Shutter	003-100892-XX
39	Rear optical housing	003-002281-XX
35	Yellow notch filter	003-002727-XX
PC board and module assemblies		
25	ASSY keypad	003-110818-XX
6	Panel driver	003-111362-XX
10	ABIC option card	108-309101-XX
	DDIC option card	108-312101-XX
	DHDIC option card	108-313101-XX
	DMXIC option card	108-314101-XX
	THIC option card	108-311101-XX
	VDIC option card	108-310101-XX
27	Keypad membrane	003-002295-XX
26	LCD display	003-110819-XX
7	Passive back plane (PBP)	003-100465-XX
9	Dual image processor card	003-100470-XX
	Single image processor card	003-002556-XX
Covers		
28	ASSY lamp side panel, includes: • Lamp side panel (P/N: 011-101882-XX) • Lamp door #1 (P/N: 011-101879-XX) • Lamp door #2 (P/N: 011-101880-XX) • 2 Lamp hinges (P/N: 011-101893-XX) • 2 Pipe light lamp doors (P/N: 011-101890-XX)	003-101009-XX
	Exhaust cover—black	003-005435-XX
29	Cover LCD display	003-002285-XX
21	Front cover—grey	003-002290-XX
	Front cover—black	003-005430-XX
19	Intake side panel—grey	003-002286-XX

Exploded view #	Description	Part number
	Intake side panel—black	003-005431-XX
13	Rear cover—grey	003-002288-XX
	Rear cover—black	003-005434-XX
4	Top cover fixed install—grey	003-002555-XX
	Top cover rental staging—grey	003-002554-XX
	Top cover—black	003-005433-XX
—	Bottom cover	003-005814-XX
Miscellaneous		
—	ASSY foot rear	003-002296-XX
24	ASSY pad foot front	003-002297-XX
22	Front infrared sensor	003-100221-XX
18	Intake air filter covers	003-002289-XX
16	Lamp door interlocks	003-900550-51P
20	Lens mount	003-100891-XX
5	Rear infrared sensor	003-110806-XX
11	Remote temp sensor modules (RTSM #2, #3, and #4)	003-100585-XX
—	Packaging kit	003-004631-XX
—	Lens mount plug	003-005710-XX
—	Lens safety screw	003-003922-XX
—	Lens connector	003-003351-XX
—	120 mm ground strap harness	003-100438-XX

Accessories

Learn about the accessories available for the projector.

Product name	Part number	Sold with product	Sold separately
Standard image processor	08-315101-XX	X	X
Dual image processor	108-316101-XX	X	X
Input cards			
Analog input	108-309101-XX	X	X
Dual Link DVI input card	108-312101-XX	X	X
Video decoder input card	108-310101-XX	X	X
Dual 3G/HD/SD-SDI input card	108-313101-XX	X	X

Product name	Part number	Sold with product	Sold separately
Twin HDMI input card	108-311101-XX	X	X
DMX512 interface card	108-314101-XX	X	X
TDPIC input card	108-451101-XX	–	X
Filters			
Air dust filter	118-100104-XX	X	X
Air fog filter	118-128102-XX	X	X
Air fog filter door	118-128103-XX	X	X
Lenses			
0.40:1 SX+/0.37:1 HD	118-131106-XX	–	X
0.73:1 SX+/0.67:1 HD fixed	118-100110-XX	–	X
0.8-1.16:1 HD	118-130105-XX	–	X
1.2:1 SX+/1.1:1 HD fixed	118-100117-XX	–	X
1.25-1.6 SX+/1.16-1.49 HD zoom	118-100111-XX	–	X
1.5-2.0 SX+/1.4-1.8 HD zoom	118-100112-XX	–	X
2.0-2.8 SX+/1.8-2.6 HD zoom	118-100113-XX	–	X
2.8-4.5 SX+/2.6-4.1 HD zoom	118-100114-XX	–	X
4.5-7.5 SX+/4.1-6.9 HD zoom	118-100115-XX	–	X
7.5-11.2 SX+/6.9-10.4 HD zoom	118-100116-XX	–	X
Lamps			
Lamp (200W)	003-100856-XX	X	X
Lamp (350W)	003-100857-XX	X	X
Lamp (450W)	003-102385-XX	X	X
Lamp Driver (200W)	003-120330-XX	X	X
Lamp Driver (350W)	003-100272-XX	X	X
Lamp Driver (450W)	003-120554-XX	X	X
Miscellaneous			
Portrait adapter	118-116109-XX	–	X
Module IR keypad with laser	002-100005-XX	X	X
Wired keypad external harness	001-100704-XX	X	X
AutoStack	108-308101-XX	–	X
Stacking frame	118-100107-XX	–	X
Ceiling mount	118-100108-XX	–	X

Replacement procedures

Before servicing the projector, perform the following tasks.

- Always power down and disconnect power sources prior to servicing.
- Allow the unit to cool for a minimum of 10 minutes.
- *Follow all service safety warnings and guidelines* (on page 12).
- Always read and understand all instructions before starting the procedure.
- When re-installing a module, follow removal instructions in reverse unless otherwise indicated.
- When re-connecting harnesses, see *Interconnections* (on page 92).

Projector covers and feet

Learn how to remove the covers and feet of the projector.

Removing the top cover

11 screws hold the top cover in place.

Estimated replacement time: 3 minutes

1. Unscrew the four screws along the top of the lamp side panel.

2. Remove the three screws along the top of the air intake side panel.

3. Remove the two screws along the top of the front cover.

4. Remove the two screws along the top of the rear cover.

5. Remove the top cover.
6. To install the top cover, complete these steps in reverse order.

Removing the rear panel

The input panels and processor slots are located within the rear panel.

Estimated replacement time: 30 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
3. *Remove the card cage lid* (on page 59).
4. *Remove the card cage* (on page 61).
5. Remove the three screws on top of the rear cover.
6. Place the projector on its side.
7. Remove five screws on the bottom of the projector along the rear cover.
8. Remove the rear panel.
9. To install the rear panel, complete these steps in reverse order.

Removing the lamp side panel

The lamp doors are located on the lamp side panel and are removed with the cover. The lamp side panel is an assembly kit that includes the following: side panel, doors, hinges, and pipe light lamp doors.

Estimated replacement time: 20 minutes.

1. *Remove the lamps* (on page 81).
2. Remove the two screws, located inside the lamp door compartment.

3. *Remove the top cover* (on page 45).
4. *Remove the front cover* (on page 48).
5. Remove two captive screws securing the corner through a silver metal bracket.
6. Place the projector on its side.
7. Remove the five screws from the bottom of the projector on the lamp side.

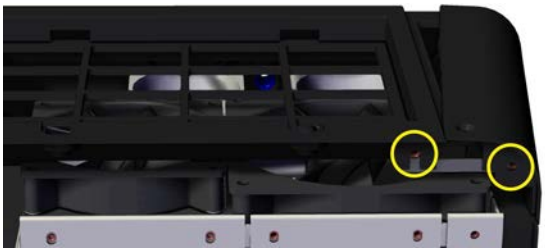
8. Disconnect wire (J78) from the status display control panel.
9. Slide the panel up until the lower corner is cleared, release pressure and remove panel.
   The panel must be tilted one way and then the other to fit around modules (card cage).
10. To install the lamp side panel, complete these steps in reverse order.

Removing the intake side panel

Complete this procedure to remove the intake side panel.

Estimated replacement time: 20 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Loosen the two captive screws at the top of each filter door. and remove the air filter covers.
4. Place the projector on its side with the filter side facing up.
5. Remove the two screws securing the corner through a silver metal bracket.



6. Remove the five screws on the bottom of the projector on the intake side.
7. Remove the bottom of the panel by raising it until the bottom lip is cleared and gently push the silver clip.
   The panel must be tilted one way and then the other to fit around the card cage.

8. To install the intake side panel, complete these steps in reverse order.

Removing the front cover

Removing the front cover allows access to the yellow notch filter assembly (YNF), dynamic iris assembly and the light sensor module. The front cover is held by two screws under the top cover located in the corners and three screws along the lower portion of the front cover.

The infrared PCB is located on the inside of the front cover and is connected by one wire to the panel driver.

Estimated replacement time: 5 minutes.

1. *Remove the lens* (on page 76).
2. *Remove the top cover* (on page 45).
3. Disconnect the front IR harness P108 from the IR PCB (J108).

   When reconnecting, remove the two screws from the IR PCB, reconnect the harness, and reinstall the IR PCB onto the front cover.
4. Remove the two screws located in each corner under the top cover.

5. Remove the three screws located along the bottom of the front cover.

6. Remove the front cover.
7. To install the front cover, complete these steps in reverse order.

Removing the front feet

Complete the following procedure to remove the front feet.

Estimated replacement time: 10 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Remove the c-clip, locking the foot bolt in place.
4. Turn the front foot counter-clockwise to remove.
5. To re-install, follow these steps in reverse order.

Removing the rear foot

Complete the following procedure to remove the rear foot.

Estimated replacement time: 20 minutes.

1. *Remove the top cover* (on page 45).
2. Remove the two screws from the rear cover.

3. *Remove the card cage lid* (on page 59).
4. Remove the two screws securing the card cage to the ballast.
5. Remove the two screws securing the card cage to the bottom cover.
6. Remove the clip screw.

7. Place projector on its side.
8. Remove the five screws from the bottom rear of the projector.
9. Lift the card cage slightly to remove the rear cover.
10. Remove the c-clip, locking the foot bolt in place.
11. Turn the rear foot counter-clockwise to remove.
12. To re-install, follow these steps in reverse order.

Filtration

Filters help to reduce the effects created by dust, smoke, fog, and other foreign materials from entering the projector.

Notice. If not avoided, the following could result in property damage.

- Do not operate the product without the filter installed.
- Use only high efficiency Christie approved filters.
- Do not reuse an old air filter.

Replacing the dust air filter

Complete this procedure to replace the dust air filter.

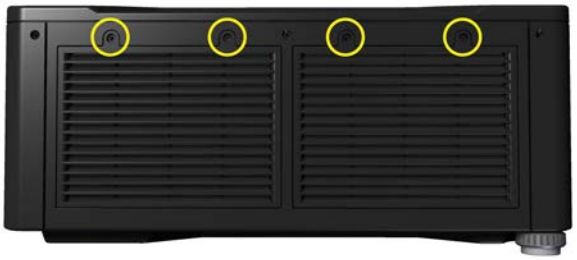
Estimated replacement time: 4 minutes.

Check projector air dust filters, at minimum, every month.

Dust air filters must be replaced whenever the lamp is replaced or between 200-500 hours, depending on use. A clogged air filter reduces air flow and can lead to overheating and failure of the projector. Check monthly by inspecting its color through the side vent grille with a flashlight. Replace grey colored filters.

Leave the filters in their sealed packaging until ready for use.

1. Unscrew the two captive screws at the top of each filter door. Allow the door to rest down and away from the projector.



2. Slide the air filter out and replace, vacuum or wash the filter.
   Wash using mild soap and water. Dry the filter before using.
3. Insert the new or clean air filter.
4. Secure the filter door by tightening the two captive screws loosened in step 1.

Replacing the fog oil filter

Complete the following procedure to replace the fog oil filter.

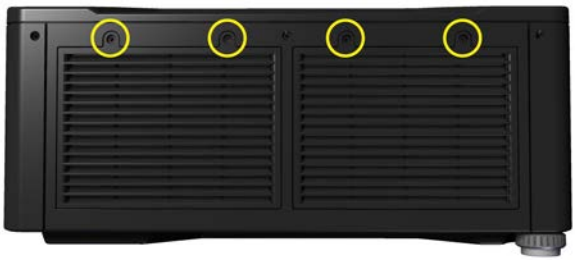
Estimated replacement time: 4 minutes.

Fog filters should be replaced after each use of the projector to a maximum of 20 hours. The life of the filter is approximately 20 hours based on environmental conditions. Leave the filters in their sealed packaging until ready for use.

The fog filters cannot be re-used or they clog up with oil and the projector overheats and shuts down.

Each filter is a two-stage filter; the black activated charcoal layer faces out, and the white layer faces the projector.

1. Loosen the two captive screws at the top of each filter door.



2. Slide the filter out.
3. Insert the new filter with the white layer facing into the projector and the black layer facing out.
4. Secure the filter door by tightening the two captive screws loosened in step 1.

Ventilation and cooling

Vents and louvers provide ventilation, both for intake and exhaust, keeping the projector components within their operating temperature specifications.

Do not install the projector near a radiator, heat register, or within an enclosure. To ensure adequate airflow, follow the requirements specified in the line drawing (P/N: 020-100192-XX) and never block or cover the vents.

When replacing fans, ensure you confirm the fan direction for airflow. The correct orientation of the fan also ensures that the fan harness reaches the connector.

Removing the electronics intake fan (#2)

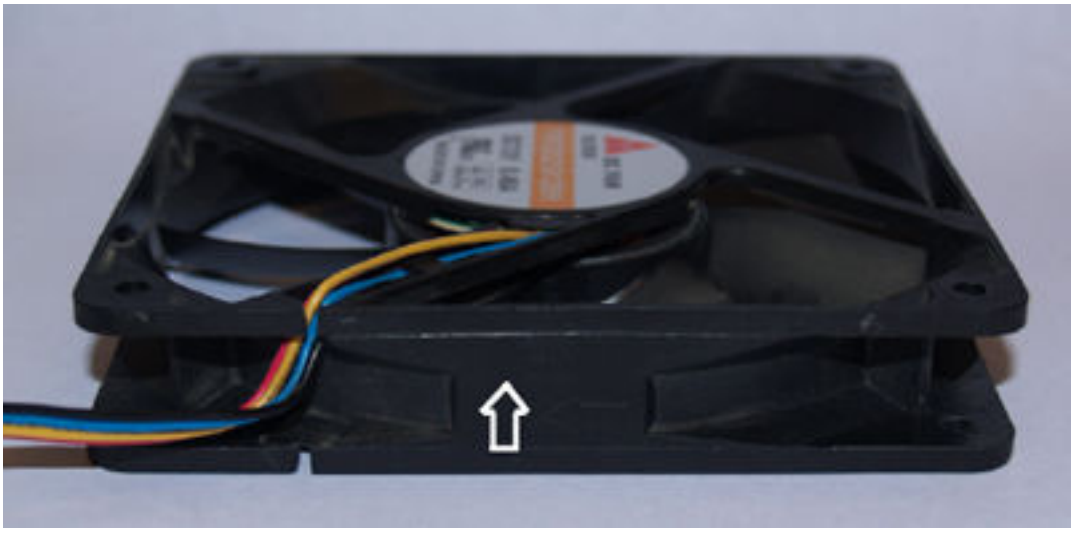
Fan #2 is located inside the filter bay on the outside of the card cage.

Estimated replacement time: 23 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the card cage* (on page 61).
5. *Remove the panel driver* (on page 62).
6. *Remove the processor board* (on page 88).
7. *Remove the input cards from the rear of the card cage* (on page 63).
8. Remove the fan by removing the four isolator pads in each corner.

   To remove the fan, the card cage must be removed. The backs of the isolator pads are not accessible after removing the card cage. Almost the entire inside of the card cage must be removed to access them. Replacement isolator pads are part of the service kit.

   The proper orientation of this fan is with the label on the fan hub facing inward towards the card cage. An airflow indicator arrow on the fan must be pointing inward towards the card cage.



9. To re-install, follow these steps in reverse order.

Removing the electronics intake fan (#7)

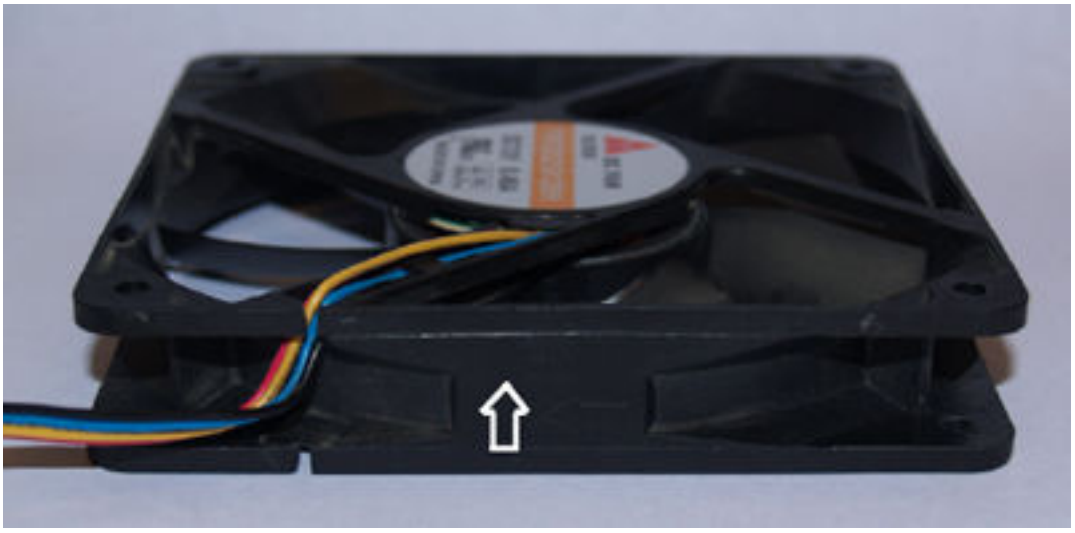
Fan #7 is located inside the filter bay on the outside of the card cage.

Estimated replacement time: 18 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the card cage* (on page 61).
5. Remove the fan by removing the four isolator pads in each corner.

   To remove the fan, the card cage must be removed. The backs of the isolator pads are not accessible after removing the card cage. Almost the entire inside of the card cage must be removed to access them. Replacement isolator pads are part of the service kit.

   The proper orientation of this fan is with the label on the fan hub facing inward towards the card cage. An airflow indicator arrow on the fan must be pointing inward towards the card cage.

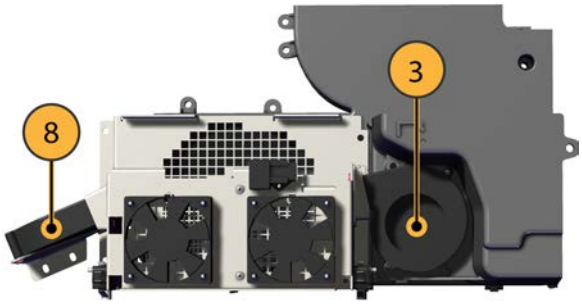


6. To re-install, follow these steps in reverse order.

Removing the lamp fans (#3 and #8)

Fan #3 is located outside the #2 lamp compartment and provides cooling to lamp #2. Fan #8 is located outside the #1 lamp compartment and provides cooling to lamp #1. A guide pin is used so the fan can only fit one way.

Estimated replacement time: 10 minutes per fan.

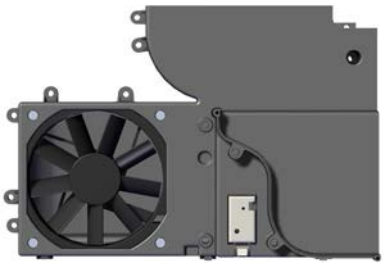


1. *Remove the top cover* (on page 45).
2. Remove the two screws from the fan.
3. Disconnect the fan wire at the quick disconnect coupling.
4. Cut the cable tie holding the wire to fan #9.
5. Remove the fan.
6. To re-install, follow these steps in reverse order.

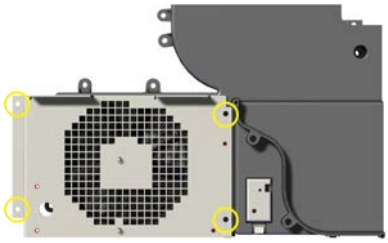
Removing the lamp exhaust fan (#4)

Fan #4 is directly underneath the lamp compartment. It sits inside a duct system that reaches all the way to the power supply. The duct system consist of two pieces assembled together an upper portion and a lower portion.

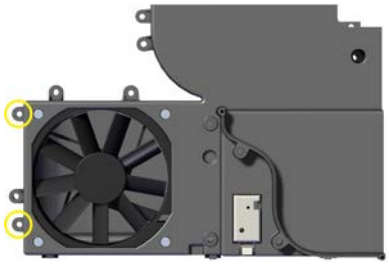
Estimated replacement time: 80 minutes.



1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the card cage* (on page 61).
5. *Remove the optical assembly* (on page 78).
6. Remove the four screws from the bottom of the lamp cage.



7. Remove the lower section of the lamp cage.
8. Remove the two screws from the card cage exhaust duct.



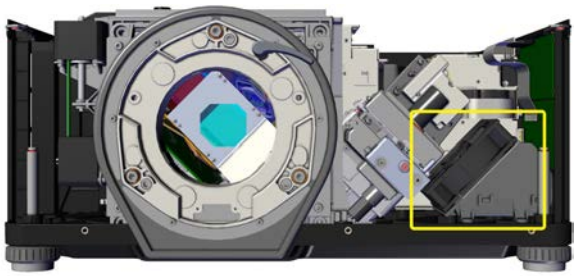
9. Disconnect **J53** from the panel driver.
10. Remove the exhaust duct.
11. *Remove the remote temperature sensor module #4* (on page 89).
12. Disconnect fan #4 wire from the quick disconnect.
13. Remove the five screws securing the lamp exhaust duct to the base.
    One screw holds a wire clip to the base.

14. Remove the duct and the fan from the projector.
15. Remove the four screws securing the upper and lower portion of the duct together.
16. Remove four isolator pads holding the fan to the upper duct.
17. Remove fan #4.
18. To re-install, follow these steps in reverse order.

Removing the side exhaust fan (#9)

Fan #9 takes the warm air from inside the projector and removes it using an exhaust duct. The fan is located underneath the optical assembly beside the printed circuit boards (PCBs) for the status display control panel.

Estimated replacement time: 14 minutes.

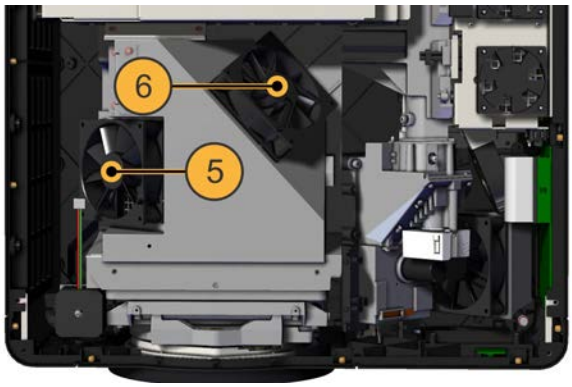


1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Cut the cable tie.
4. Disconnect fan #9 at the quick disconnect coupling.
5. Remove the three screws holding exhaust duct to base.
6. Slide the fan and the base out of projector.
7. Remove four rubber isolators holding fan to duct.
   Replacement isolator pads are part of the service kit.
8. Remove fan #9.
9. To re-install, follow these steps in reverse order.

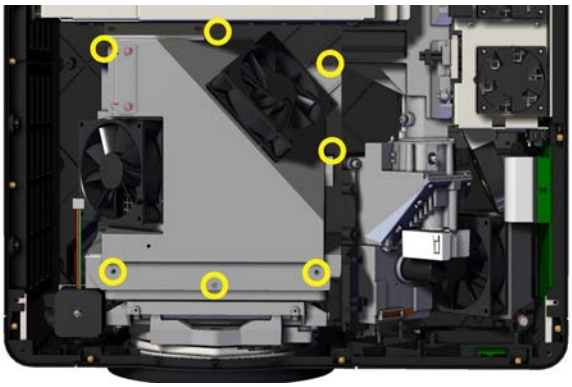
Removing the intake and exhaust fans (#5 and #6)

The screws securing the fans are also securing a grid on the inside of the light engine compartment. The grid cannot be removed until the top compartment of the engine housing is removed.

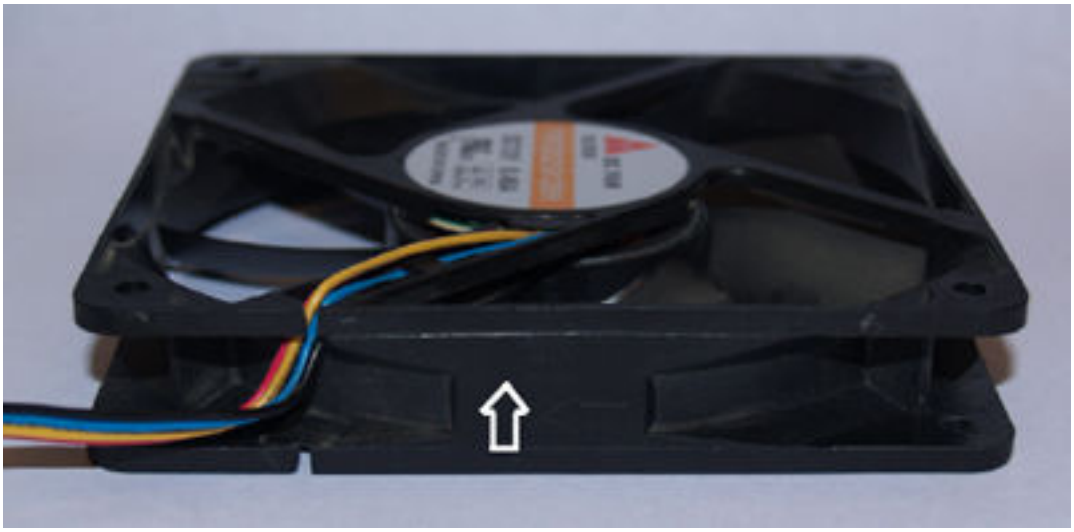
Estimated replacement time: 20 minutes per fan.



1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the light engine intake duct* (on page 81).
5. Disconnect fans #5 and #6 located on the light engine cover at the quick disconnect coupling.
6. Remove the seven screws from the light engine cover.



7. Remove the top portion of the light engine cover with the fans attached.
8. Remove the four screws from each corner of the fan.
9. Remove intake fans #5 and #6.
    - For fan #5 only—The proper orientation of this fan is with the label on the fan hub facing inward towards the light engine. An airflow indicator arrow on the fan must be pointing inward towards the light engine.
    - For fan #6 only—The proper orientation of this fan is with the label on the fan hub facing outward away from the light engine. An airflow indicator arrow on the fan must be pointing outward away from the light engine.



10. To re-install, follow these steps in reverse order.

Electronics

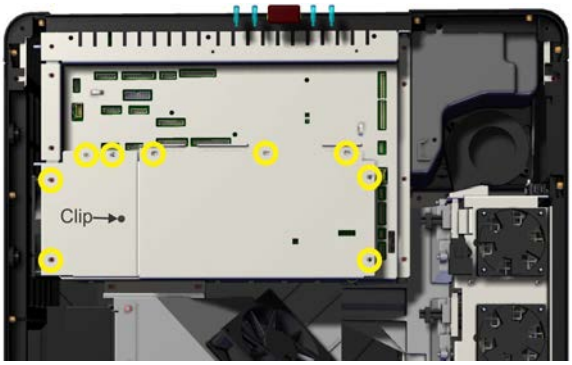
Learn how to replace the electronic components and cards in the projector.

Removing the card cage lid

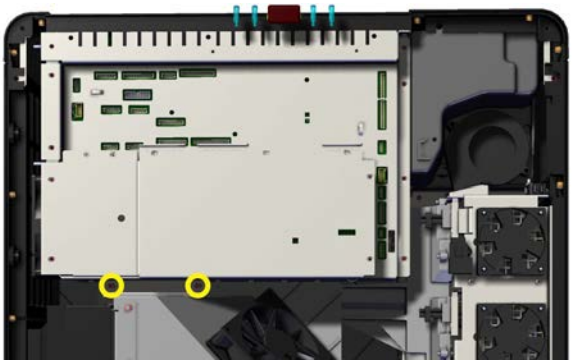
Removing the card cage lid reveals the flex cables and power cables to the panel driver (SHDPD). You can also access the lamp driver boards and their power cables.

Estimated replacement time: 7 minutes.

1. *Remove the top cover* (on page 45).
2. Remove the card cage cover by removing the nine screws and one clip.



3. Remove the two screws securing the card cage lid to the bridge.



4. Remove the card cage lid.
5. To re-install, follow these steps in reverse order.
   During assembly, make sure that the wires are not pinched between the lid and the card cage.

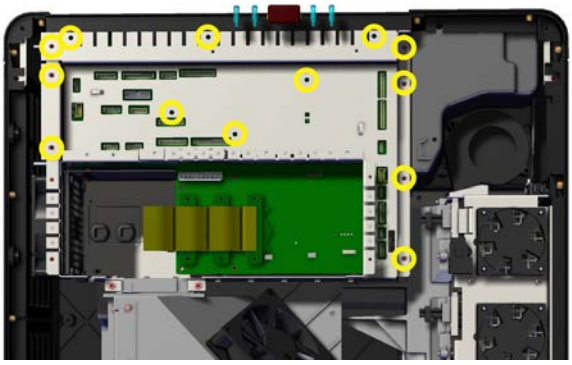
Removing the card cage plate (shield)

The card cage plate is located above the panel driver. Many of the wires are plugged into the panel driver through the plate and must be disconnected to remove the plate.

Estimated replacement time: 10 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 60).
3. Disconnect the J48, J65, J40, J38, J47, J42, J60, J50, J52, J54, J43, and J41 wires from the card cage.

   Make sure all wires are labeled with their corresponding numbers.
4. Remove the 13 screws securing the plate to the card cage.



5. Remove the card cage plate.
6. To re-install, follow these steps in reverse order.

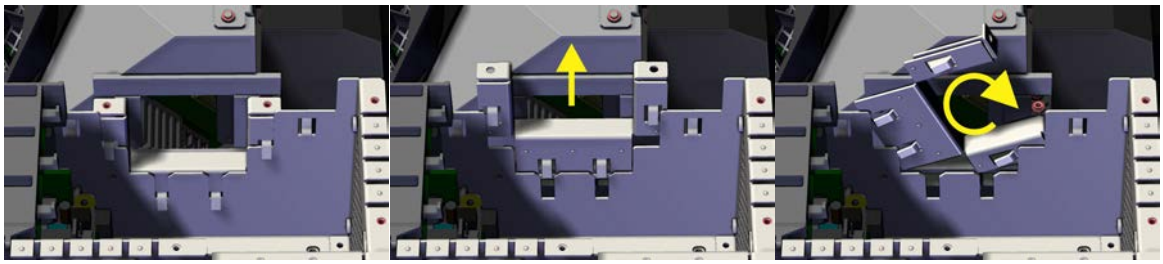
Removing the bridge

The bridge is located between the card cage and the light engine compartment. It allows wires to pass from the light engine to the card cage, while doubling as an EMI shield.

Estimated replacement time: 8 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 60).
3. Remove the bridge by pulling it up from the tabs and rotating it out.

   The shutter wire is delicate. Do not pinch or crimp during removal or installation.



4. To re-install, follow these steps in reverse order.

Removing the card cage

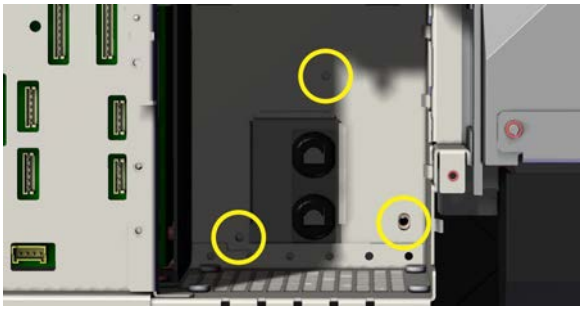
The card cage is designed so that it can be removed as a complete assembly. Removing the card cage gives access to the power supply located directly underneath. Everything in the card cage can be removed without taking the whole module out, with the exception of the passive back plane (PBP).

Estimated replacement time: 25 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
3. *Remove the card cage lid* (on page 60).
4. Disconnect the J48, J65, J40, J38, J47, J42, J60, J50, J52, J54, J43, and J41 wires.
5. Disconnect the three engine cable connections (P86, P85, P84) from the panel driver.
6. Disconnect the 12V power supply cable (J26).
7. Disconnect the two power cable connected to the lamp drivers.
8. Remove the four screws on the rear of the projector in the top and bottom corners of the input panel.

9. *Remove the bridge* (on page 60).
10. Remove the silver brackets for the anode/cathode lamp harness on top of the lamp cage.
11. Remove the three screws from the bottom of the card cage.

    Two of the screws secure the clips to the power cables.



12. Using a long stem slotted screw driver, loosen the captive screw on the bottom of the card cage.

    The screw is located using a hole at the top of the card cage.

13. Remove the wires from the clip.

14. Grab the three power cables inside the card cage and slowly pull the card cage up and out of the unit.

    The cables slides out of the hole in the bottom of the card cage. Use caution when pulling cables through this hole. Do not damage wire insulation.

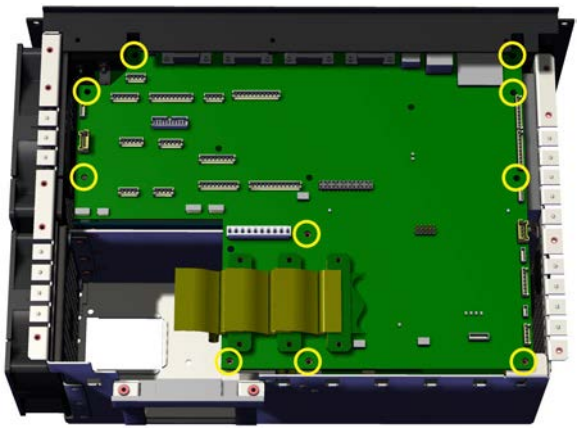
15. To re-install, follow these steps in reverse order.

Removing the panel driver

The panel driver is located directly under the card cage plate. This board provides several different interfaces, some of these include RS232 Input and Output, RS422 Input, GPIO, and Ethernet. Interconnections include lens motor control, shutter, IRIS, light sensor, power supply control, and board temperature.

Estimated replacement time: 20 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
3. *Remove the card cage lid* (on page 60).
4. Disconnect the following wires: J48, J65, J40, J38, J47, J42, J60, J50, J52, J54, J59, J43, J44, J45, J26, J29, and J41.
5. *Remove the card cage plate* (on page 60).
6. Disconnect the three engine cable connections P86 (blue), P85 (green), and P84 (red) from the panel driver.
7. Remove the 10 screws and the center standoff from the panel driver.



8. Remove the eight standoffs from the input face plate.

9. Remove the panel driver by pulling up and out.

    The panel driver is connected underneath to the passive back plane (PBP).

10. To re-install, follow these steps in reverse order.

Removing the option cards

Complete the following procedure to remove the option cards.

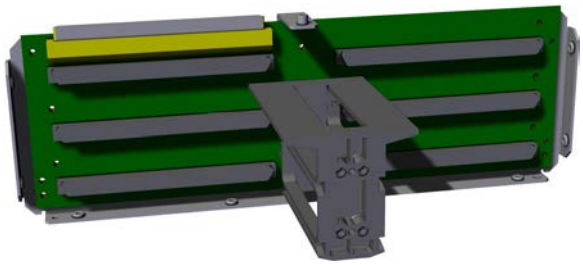
Estimated replacement time: 2 minutes.

1. Unscrew the two captive screws.
2. Slide the input modules out along the guides.
3. To re-install, follow these steps in reverse order.

Removing the passive back panel (PBP) module

The PBP module acts as a central hub. The panel driver, the processor board, and all the option cards insert into the PBP module. The PBP module also houses the EEPROM, which contains all the projector operational settings.

Estimated replacement time: 60 minutes.



Before replacing the PBP module; software settings must be saved. Do not power the projector back on until the PBP module is replaced.

Creating a software backup

Create a software backup before removing the passive back panel (PBP) module.

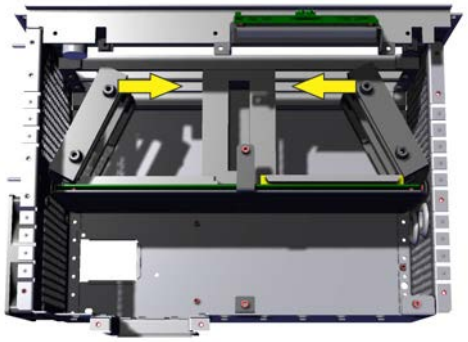
1. Power the projector on.
2. Using the remote keypad, navigate to **Main Menu** > **Configuration** > **Service** > **Replace Backplane**.

   The Service menu requires a password.
3. To confirm, click **Yes**.
4. Power the projector off.

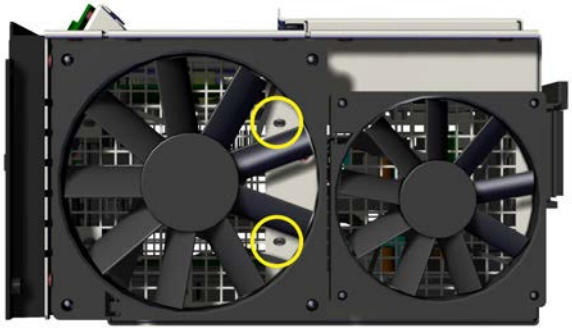
Removing the passive back panel (PBP) module

Complete the following procedure to remove the PBP module.

1. *Remove the top cover* (on page 45).
2. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
3. *Remove the card cage lid* (on page 60).
4. *Remove the card cage* (on page 61).
5. *Remove the card cage plate* (on page 60).
6. *Remove the panel driver* (on page 62).
7. *Remove the processor board* (on page 88).
8. *Remove the option cards* (on page 63).
9. *Remove the lamp drivers* (on page 66).
10. Remove the lamp driver casing by removing the two screws from bottom of the card cage.
11. Remove the left and right guides that snap into the grid.

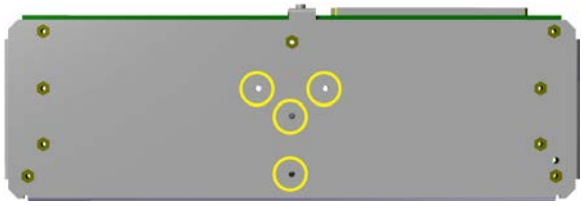


12. Remove the four screws securing the PBP to the base of the card cage.
13. Remove the two screws on the left side.
14. Remove the two screws on the right side by putting the screw driver through the fan to remove the screws. The bottom screw may require some pressure on the fan to be pushed to the right to be removed.



15. Gently remove the PBP and guide together by pulling up and out.

    The PBP plate sits on two guide pins on the bottom of the cage. The black guide insert is also connected to two guide pins at the front of the cage.
16. Remove four screws from the rear of the PBP plate securing the guide.



17. Remove the guide insert.
18. Remove the nine screws from the PBP.
19. Remove the PBP by pulling it up from the plate.

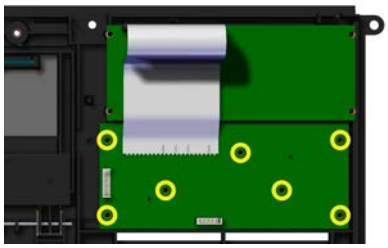
    Two guide pins keep it in place. The guide pins securing the PBP may be tight and extra force may be required to remove them.
20. To re-install, follow these steps in reverse order.

Removing the status display control panel keypad

The keypad is located on the lamp side of the projector towards the front and sits directly under the LCD screen.

Estimated replacement time: 22 minutes.

1. *Remove the lamps* (on page 81).
2. *Remove the top cover* (on page 45).
3. *Remove the front cover* (on page 48).
4. Disconnect wire (J78) from the keypad.
5. *Remove the lamp side panel* (on page 46).
6. Disconnect the flex cable from the LCD PCB located on the inside of the lamp panel.
7. Remove seven screws from keypad PCB.



8. Remove the keypad PCB.

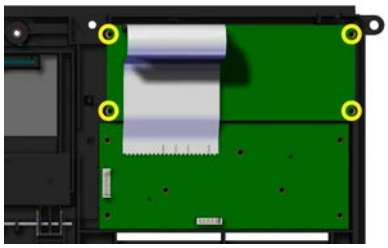
9. Remove the keypad membrane.
10. To re-install, follow these steps in reverse order.

Replacing the status display control panel

The status display control panel (LCD screen) is located on the lamp side of the projector towards the front and sits directly above the keypad.

Estimated replacement time: 22 minutes.

1. *Remove the lamps* (on page 81).
2. *Remove the top cover* (on page 45).
3. *Remove the front cover* (on page 48).
4. Disconnect wire (J78) from the keypad.
5. *Remove the lamp side panel* (on page 46).
6. Disconnect flex cable from the LCD PCB located on the inside of the lamp panel.
7. Remove the four screws from the LCD PCB.



8. Remove the LCD.
9. Before installing the new status display control panel screen, ensure the face of the LCD and the inside surfaces of the clear plastic cover on the side panel are clean.
10. To re-install, follow these steps in reverse order.

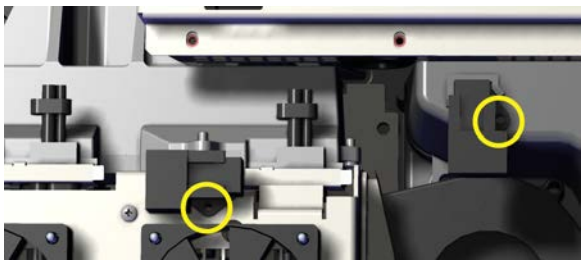
Removing the lamp drivers

The lamp drivers are located inside the card cage and are held in place by two screws.

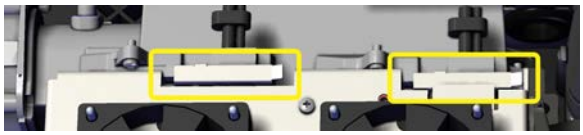
Estimated replacement time: 24 minutes.

1. *Remove the lamps* (on page 81).
2. *Remove the top cover* (on page 45).
3. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
4. *Remove the card cage lid* (on page 59).
5. Disconnect wires J44 and J45 from the lamp drivers.
6. Disconnect the power cables from each of the lamp driver boards.

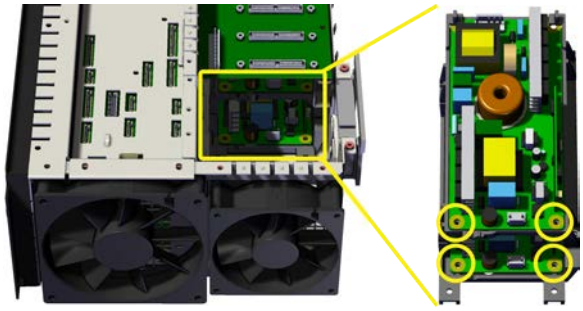
7. On 450W models only, remove one screw from each interlock to release the wiring harness.



8. Remove both silver brackets from anode/cathode cables, located on top of the lamp compartment.



9. *Remove the card cage plate* (on page 60).
10. Remove the two screws from each lamp driver board (a total of four screws).



11. Carefully lift the top lamp driver board up and slide it out.

    The anode and cathode harness is still connected. The harness is long enough for the driver to slide out.
12. Disconnect the anode and cathode harness from the lamp driver.
13. Remove the lamp driver.

14. To remove the bottom lamp driver, repeat steps 8 to 11.

    Note the following about the lamp drivers:

    - When re-installing lamp drivers, ensure that both lamp drivers are of the same revision. The 450 lamp drivers 003-120554-01, 003-120554-02, and 003-120554-03 are not compatible. Pairs of drivers installed in a projector must be the same revision.
    - Lamp drivers 003-120554-01 and 003-120554-02 are compatible with 450W projectors, where the projector part number has -XX = -02.
    - The 003-120554-02 lamp drivers require a minimum software revision version of 2.3.1.
    - The 003-120554-03 lamp drivers can only be installed in 450W projectors, where the projector part number has -XX = -03.
    - The 003-120554-03 lamp drivers require a minimum software revision version of 2.4.0.

15. To re-install, follow these steps in reverse order.

Removing the power supply

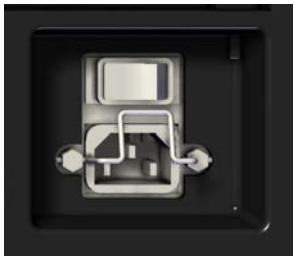
The power supply is located underneath the card cage and comes as an assembly with two fans. To gain access the card cage must be removed and all connections disconnected. On 200W and 350W units, the power supply is rated for 1100W. On 450W units, the power supply is rated for 1400W.

1. *Remove the top cover* (on page 45).
2. *Remove the remote temperature sensor module (RTSM) #2* (on page 90).
3. *Remove the card cage lid* (on page 59).
4. *Remove the bridge* (on page 60).
5. *Remove the card cage* (on page 61).
6. Remove the four screws securing the power supply to the base plate.
7. Remove the AC clip.
8. Remove the power supply.

Installing the power supply

Complete the following procedure to install the power supply.

1. Place the power supply into the bottom cover; ensure the wire clip exits the rear of the bottom cover, use your hand to guide the clip through the cut-out.



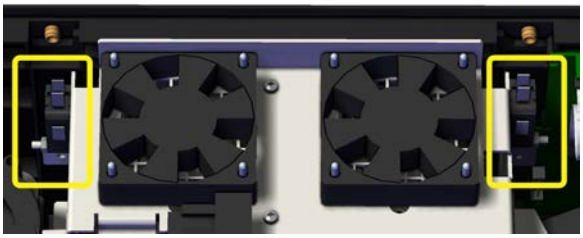
2. Line up the power supply attachment points with the inserts in the base cover and attach with four screws.

3. When re-installing the card cage, feed the power supply cables through the opening in the card cage.

Removing the lamp door interlock switches

The lamp door interlock switches are located on either side of the lamp compartment, one for each lamp. When the door is opened for either lamp, the interlock opens and shuts down both lamps. Both interlock switches are connected by one harness to the panel driver at location P46.

Estimated replacement time: 4.5 minutes per interlock switch.



1. *Remove the top cover* (on page 45).
2. Disconnect the interlock wiring harness (J46) from the panel driver location P46.
3. Remove the nut.
4. Remove the ground wire.
5. Remove the interlock by sliding it off the locking post.
6. Remove the red and black wires.
7. For the other lamp door interlock, repeat steps 1 to 6.
8. To re-install, follow these steps in reverse order.

Optics

Learn how to replace the light source, mirrors, and other optical components.

Removing the front optical housing

The front optical housing is part of the optical assembly. It attaches to the light engine cover by four screws. Inside there are three lenses and also one mirror to fold the light. The housing is compact with easy access to the optics.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the optical assembly* (on page 78).
5. Remove the four screws securing the rear housing to the front housing.
6. Remove the rear optical housing and integrator from the optical assembly.
7. Remove the four screws securing the front optical housing to the light engine cover.
8. Remove the front optical housing.
9. To re-install, follow these steps in reverse order.

Removing the fold mirror on the front optical housing

Complete the following procedure to remove the front optical housing fold mirror.

Estimated replacement time: 8 minutes.

1. Remove the four screws holding the clips to the fold mirror.
2. Before removing the clips, note the orientation of the clip to the mirror.
   This is important for installing the new mirror.
3. Remove the four clips.
4. Remove the mirror.
5. To re-install, follow these steps in reverse order.

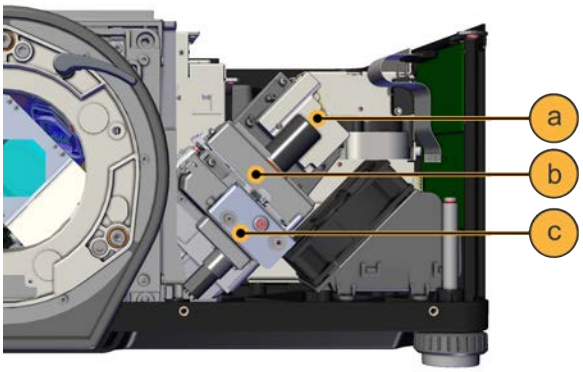
Removing the rear optical housing

The rear optical housing assembly is part of the optical assembly and is where the light can be altered using the yellow notch filter, the dynamic iris assembly and the fold mirror. The light sensor module is

also located on the rear optical housing and measures the intensity of the light. Inside, one lens and one mirror fold the light (fold mirror).

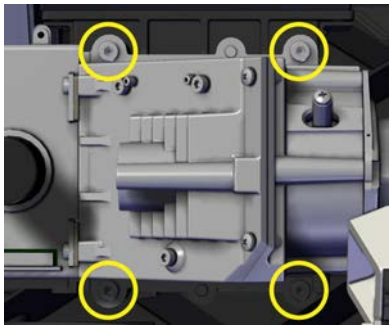
Estimated replacement time: 52 minutes

Dynamic iris and yellow notch filter are only applicable on 200W and 350W models.



A	Light sensor module
B	Dynamic iris (200W and 350W only)
C	Yellow notch filter (200W and 350 only)

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the optical assembly* (on page 78).
5. *Remove the dynamic iris assembly* (on page 72).
6. *Remove the yellow notch filter* (on page 73).
7. *Remove the light sensor module* (on page 72).
8. Remove the four screws connecting the rear optical housing to the front optical housing.
9. Remove the rear optical housing and the integrator from the front optical housing
10. Remove the four screws connecting the integrator assembly to the rear optical housing.

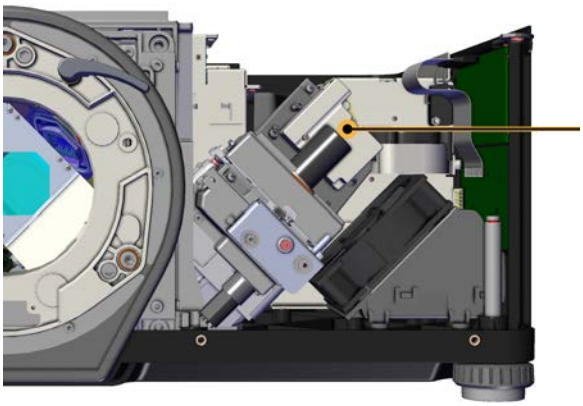


11. Disconnect the rear optical housing using one guide pin.
12. To re-install, follow these steps in reverse order.

Removing the light sensor module (LSM) LiteLOC

The light sensor module is made of a hard white plastic and is located at the front of the projector. The LSM can be serviced without having to remove the whole optical assembly from the projector.

Estimated replacement time: 8 minutes.



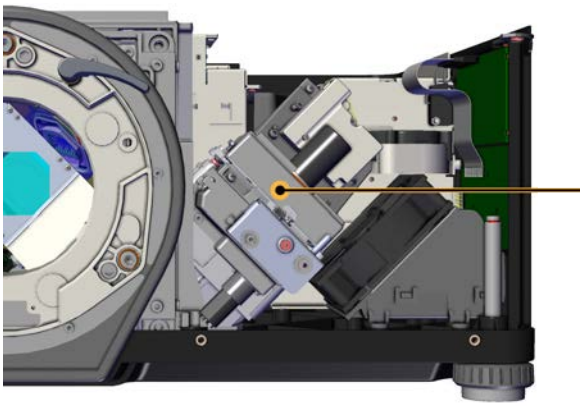
1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. *Remove the dynamic iris assembly* (on page 72).
4. Remove the two screws from the assembly; do not drop the screws into the cooling duct.
5. Remove the wire (J1-LSM) from the LSM.
6. Remove the LSM assembly by sliding it out of the optical assembly.
7. Remove the two self tapping screws from the LSM assembly.
8. Remove the LSM cover.
9. Remove the PCB sensor.
10. To re-install, follow these steps in reverse order.

Removing the dynamic iris assembly

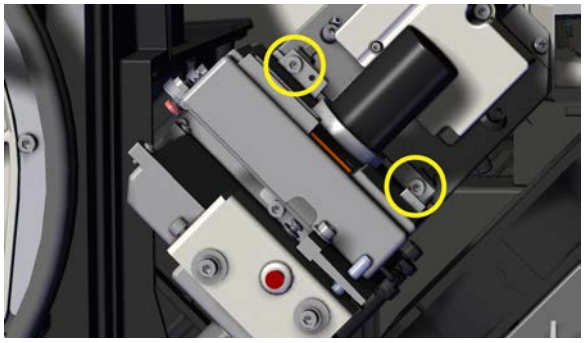
The dynamic iris assembly is part of the optical assembly. The dynamic iris assembly can be serviced without having to remove the whole optical assembly from the projector.

Estimated replacement time: 7 minutes.

Dynamic iris is only applicable on 200W and 350W models.



1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Remove the wire J82 from the iris assembly.
4. Remove J81 from the dynamic iris driver.
5. Remove the two screws from the assembly; do not drop the screws into the cooling duct.



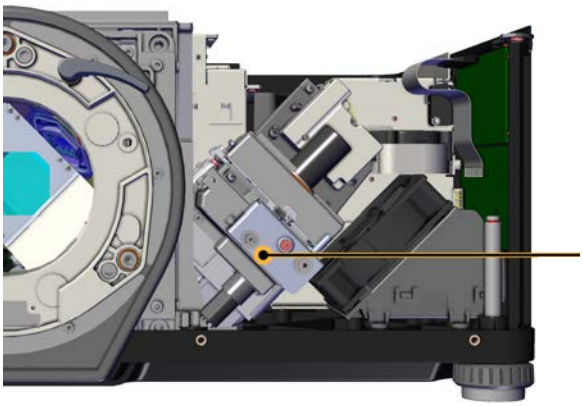
6. Slide the dynamic iris assembly out.
7. To re-install, follow these steps in reverse order.

Removing the yellow notch filter assembly (YNF)

The yellow notch filter (YNF) assembly is a motorized assembly.

Estimated replacement time: 8 minutes.

Yellow notch filter is only applicable on 200W and 350W models.



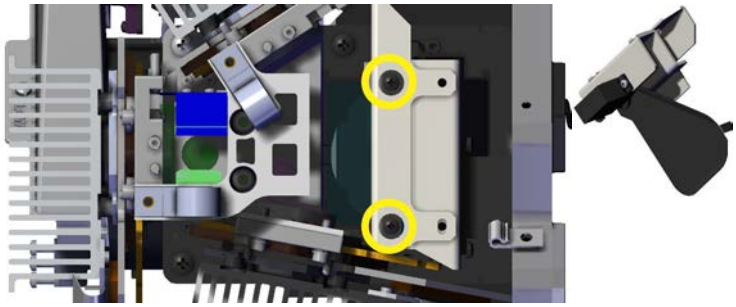
1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Remove J62 from the panel driver and guide it through the three wire clips.
4. Remove the three screws from the YNF assembly.
5. Remove the YNF by sliding it out of the optical housing.
   The wire on the yellow notch filter (J62) is fragile; use caution when handling.
6. To re-install, follow these steps in reverse order.

Removing the shutter assembly

The shutter assembly consists of three components: DC motor (with spring clutch); shutter blade (with high temperature coating) and mounting bracket.

Estimated replacement time: 18 minutes

1. *Remove the top cover* (on page 45).
2. *Remove the light engine intake duct* (on page 81).
3. *Remove the card cage lid* (on page 59).
4. Disconnect fans #5 and #6 located on the light engine cover at the quick disconnect coupling.
5. To remove the top portion of the housing, remove the seven screws from the light engine cover.
   One of the screws is connected to a ground.
6. Remove the top portion of light engine cover.
7. Remove the two screws securing the light dump to the engine housing.
8. Remove the light dump from the guide pin.
9. Disconnect wire (J60) from the panel driver.
10. Remove the two screws securing the shutter assembly to the prism.



11. Remove the shutter.

    The wire for the shutter is thin and fragile. It can easily get caught and pinched between the upper and lower engine housing during disassembly and assembly. Make sure the wire is not pinched during reassembly.

12. To re-install, follow these steps in reverse order.

Removing the integrator assembly

The assembly connects to the front optical housing which is a hard casting. The integrator is sealed and can be adjusted by two adjustment screws, one for the horizontal and one for the vertical. Light enters from the side of the integrator and is directed at the angle of incidence for total internal reflection to occur.

Estimated replacement time: 53 minutes.

Caution! If not avoided, the following could result in minor or moderate injury.

- Always wear clean, lint-free gloves when handling the product.

Each lamp has one integrator. One integrator is shorter because the light travels a shorter distance.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the optical assembly* (on page 78).
5. Remove the four screws securing the rear optical housing to the front optical housing.
6. Remove the rear optical housing and integrator from the front optical housing.
7. Remove the four screws securing the integrator assembly to the rear optical housing.
8. Disconnect the integrator assembly using one guide pin.
9. To re-install, follow these steps in reverse order.

Removing the fold mirror

The fold mirror assembly is part of the optical assembly. It attaches to the rear optical housing where there are three adjustment screws and two small set screws. The bottom screw is not as accessible; it is located beneath the light sensor module (LSM).

Estimated replacement time: 60 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the card cage lid* (on page 59).
3. *Remove the bridge* (on page 60).
4. *Remove the optical assembly* (on page 78).
5. Remove the rear optical housing and integrator from the front optical housing.
6. Remove the four screws securing the fold mirror assembly to the rear optical housing.
7. Remove the fold mirror.
8. Remove the three screws securing the fold mirror frame to the optical housing cover.
9. Before removing the mirror clips, note the orientation of the clip to the mirror.
   This is important for installing the new mirror.
10. If the mirror is being replaced due to breakage, carefully clean the light tube of any debris. Replace any damaged components.

Installing the fold mirror

Complete the following procedure to install the fold mirror.

Estimated replacement time: 60 minutes.

The reflective surface of the mirror must be placed inwards to the light path.

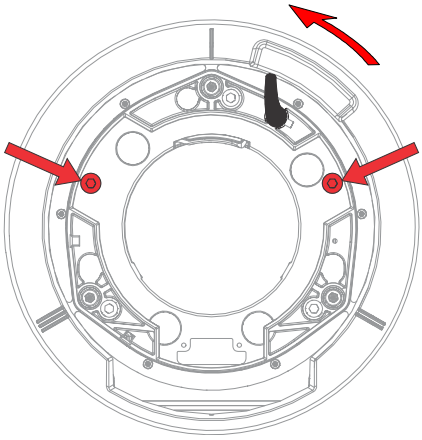
1. Check which is the reflective surface; gently place an object against the glass surface.
   If the object and the reflective image touch, this is the reflective surface.
2. Replace the mirror and the clips in the same orientation.
3. Carefully tighten the screws securing the clips.
4. Align the fold mirror frame on the optical housing cover.
5. Place a spring on the hole while inserting the screw and lightly tighten.
6. Repeat with the second hole.
7. Add the remaining screw and tighten.
8. *Repeat steps 9 to 1 of removing the folder mirror in reverse order* (on page 75).
9. *Align the mirror* (on page 23).

Removing the lens

Complete the following procedure to remove the lens.

Estimated replacement time: 1 minute.

1. Remove and retain the two security screws (for installation) from the lens mount.



2. Rotate the lens clamp counter-clockwise to the open position.
3. Pull the lens straight out of the lens mount.

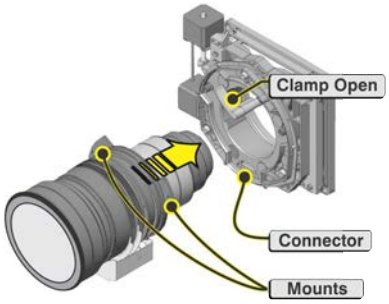
Installing the lens

Complete the following procedure to install the lens.

Estimated replacement time: 1 minute

1. Keep the (front) large lens cap on the lens to protect it during installation.
2. Rotate the lens clamp counter-clockwise to the open position.
3. Remove and retain the two security screws from the lens mount.
4. Remove the rear lens cap from the lens.
5. Align the lens interface plate with the lens mount.
6. Align the lens electrical connector with the mating connector on the lens mount.
7. Fully insert the assembly straight into the lens mount opening without turning, pressing with your hand.

   The lens may become damaged if it is inserted into the lens mount at an angle.



8. While holding the lens flat against the lens mount, rotate the lens clamp clockwise to lock the lens assembly in place.
9. For added stability such as motion applications, fasten the security screws.

The lens security screws are required if the projector is hoisted or installed in an overhead position.

10. Remove the front lens cap.

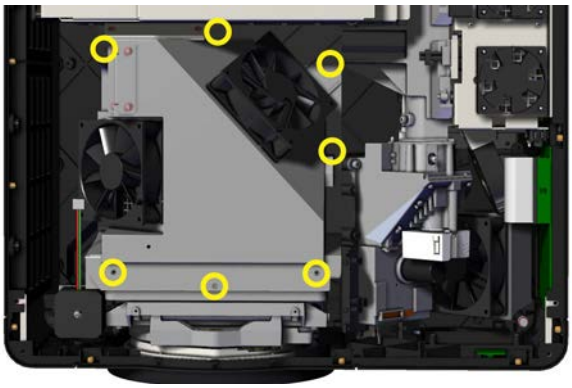
Removing the optical assembly

The optical assembly consists of the integrator, front optical, rear optical and light engine assemblies. To remove the light engine start by removing the card cage lid, it connects to the bridge, and the bridge connects to the light engine cover.

The optical assembly can be removed as one module from the projector. This module includes the light engine cover, front and rear optical housings and the integrator housing.

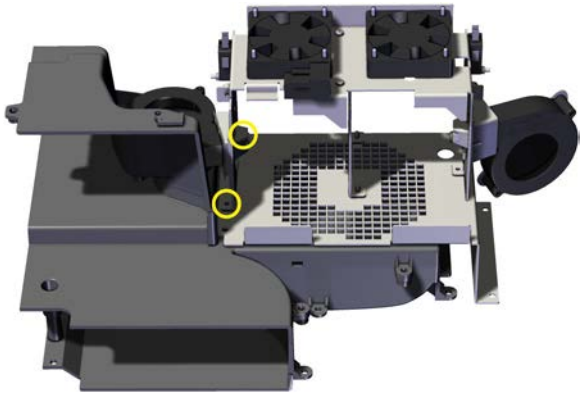
Estimated replacement time: 50 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the light engine intake duct* (on page 81).
3. Disconnect fans #5 and #6 located on the light engine cover at the quick disconnect coupling.
4. Remove the seven screws from the light engine cover to remove the top portion of the housing.

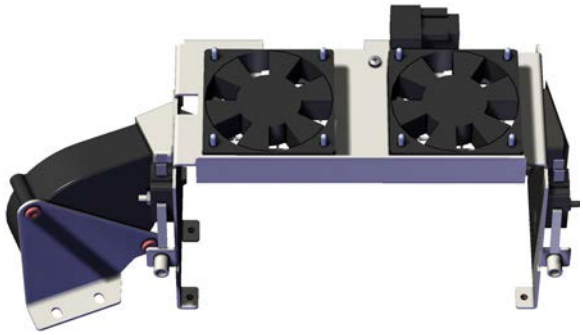


5. *Remove the card cage lid* (on page 59).
6. Disconnect the shutter harness at the panel driver.
7. Remove the six screws and disconnect the three light engine LVDS cables at the panel driver.
8. *Remove the bridge* (on page 60).
9. Remove the light engine cover.
10. *Remove the lamps* (on page 81).
11. Remove the one screw from under each lamp door holding the side panel to the lamp compartment.
12. Remove the two screws inside the lamp compartment through the top.

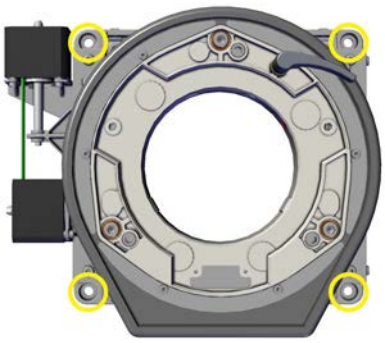
13. Remove the two screws on the outside of the compartment holding the top compartment to the bottom.



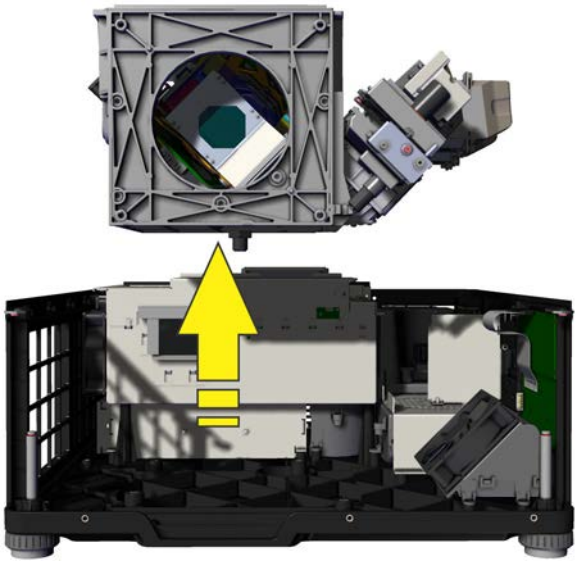
14. Remove two screws on top of the lamp compartment.
15. Disconnect fan #8 at the quick disconnect coupling.
16. Lift and remove the top portion of the lamp compartment, including fan #3 and the interlock switches.



17. Remove two silver brackets over the anode and cathode connection to the lamps.
18. Remove the anode and cathode connection from the integrator housing.
19. Remove the wires from two clips on the optical assembly where the front and rear housings meet.
20. Disconnect J81 from the dynamic iris driver.
21. Disconnect J1-LSM from the light sensor module.
22. Disconnect the yellow notch filter wire (J62) from the panel driver.
23. *Remove the front cover* (on page 48).
24. Remove the four screws from each of the four corners of the front lens mount.



25. Set the lens mount beside the projector, all harness and wires are still attached.
    When replacing, the lens mount sits on dowel pins.
26. Remove both side vents and any filters, if fitted.
    a) Through the rear vent opening, remove one screw from the ground strap attached to the light engine box.
    b) Through the front vent opening, remove one screw from the harness clip attached to the light engine box.
27. Disconnect fan #4 at the quick disconnect coupling.
    When reassembling, connect fan #4 before fastening screws in steps 27 and 28.
28. Remove the three screws and lock washers from inside the light engine compartment.
29. Remove the one screw and lock washer outside the light engine compartment.
30. Remove the optical assembly by lifting it up and out of the projector.



31. To re-install, follow these steps in reverse order.

Removing the light engine intake duct

The light engine intake duct allows air to flow to the light engine. The duct sits over top of intake fan #5 on the outer most side of the upper portion of the light engine cover. Air flows from outside the projector through the filter (if used) into the duct and the fan brings the air into the engine housing.

Estimated replacement time: 8 minutes.

1. *Remove the top cover* (on page 45).
2. Remove three screws.

   One screw holds the duct to the top of the light engine cover the other two screws are located at the bottom of the projector and hold the duct to the base plate.

3. Remove the wires from the spring clips located along the intake duct.
4. On 450W models only:
   a) Loosen one screw on the lock arm and swing the lock arm out of the slot.

   b) Pull the front cover forward and pull the side cover outward.
5. Remove the light engine intake duct by carefully lifting it up and out.

   The Intake RTSM harness is attached and comes out with the duct.
6. To re-install, follow these steps in reverse order.

Removing the lamps

The projector runs dual 200W, 350W, or 450W mercury lamps. Two lamps are located on the opposite side of the projector from the intake air filters.

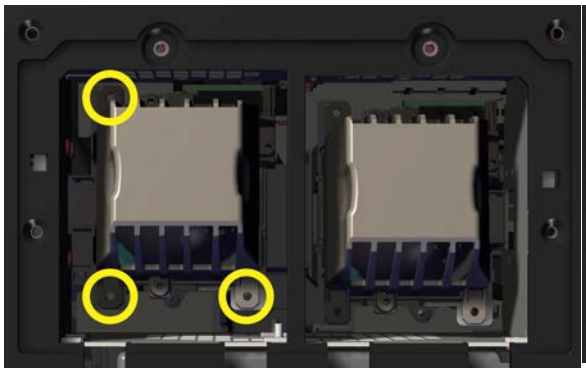
Estimated replacement time: 3 minutes per lamp.

Warning! If not avoided, the following could result in death or serious injury.

- UV EXPOSURE! Protective UV safety glasses with side shields and Christie approved protective safety clothing must be worn when performing optical adjustments or servicing the product.
- EXPLOSION HAZARD! Allow sufficient time for the lamp to cool down before powering down the product, disconnecting it from AC, and opening the lamp door.

1. Open the lamp doors by unscrewing the captive screw.

2. Unscrew the three captive screws securing each lamp.



200W and 350W

450W

3. Slowly slide the lamp out of the compartment.
4. For the second lamp, repeat steps 1 to 3.
5. Check the aluminum tape on the lamp door. If there are any signs of adherence degradation, replace the tape.

Installing the lamps

If replacing lamps due to a lamp explosion; both lamps should be removed from the lamp housing area, including fan #4 and exhaust ducts. Ensure they are carefully vacuumed before lamp replacement.

Estimated replacement time: 3 minutes per lamp.

Warning! If not avoided, the following could result in death or serious injury.

- UV EXPOSURE! Protective UV safety glasses with side shields and Christie approved protective safety clothing must be worn when performing optical adjustments or servicing the product.

1. Carefully insert the lamp into the lamp housing with the connector oriented to the top.
2. Seat the lamp onto the mating connector in the projector and push the lamp forward until fully seated.

3. Secure the lamp with the three captive screws.
4. Close and secure the lamp door.

Disposing of the lamp

The lamp is extremely hazardous. Do not dispose of in regular trash.

For warranty claims:

1. Carefully repack the lamp with the original shipping material and carton.
2. Enclose the completed RMA claim form that came with the lamp.
3. Ship the lamp to the nearest Christie service depot for evaluation.

For safe disposal:

1. Pack the lamp into its original carton (without the packaging material).
2. Tape the box up securely along its seams.
3. Discard as industrial waste, in accordance with your local regulations.

Removing the light engine

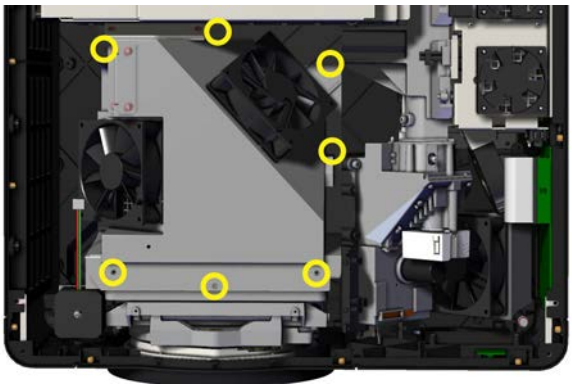
The light engine is located inside the light engine cover. The engine is secured by three screws holding it to the base plate. The light engine can be removed without having to remove the entire optical assembly.

Estimated replacement time: 40 minutes.

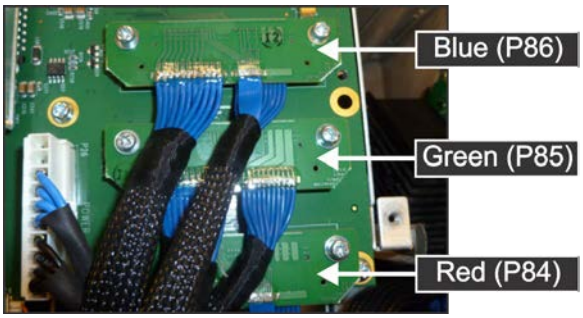
Caution! If not avoided, the following could result in minor or moderate injury.

- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.

1. *Remove the top cover* (on page 45).
2. *Remove the light engine intake duct* (on page 81).
3. *Remove the card cage lid* (on page 59).
4. Disconnect fans #5 and #6 located on the light engine cover at the quick disconnect coupling.
5. Remove the seven screws from the light engine cover to allow the top portion of the housing to be removed.



6. Remove the top portion of light engine cover.
7. Remove the two screws securing the light dump to the engine housing.
8. Remove the light dump from guide pin.
9. *Remove the shutter* (on page 74).
10. Remove the screws and disconnect the three engine cable connections from the panel driver.



11. Remove three screws securing the light engine to the base.
12. Use the light engine handle to slide the light engine up and out carefully. Do not touch the formatter boards or heat sinks. The engine is sitting on two guide pins.

Installing the light engine

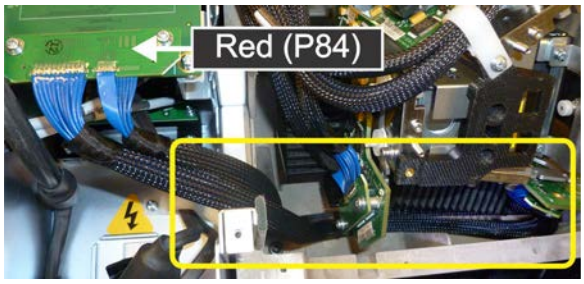
Complete the following procedure to install the light engine.

Estimated replacement time: 40 minutes.

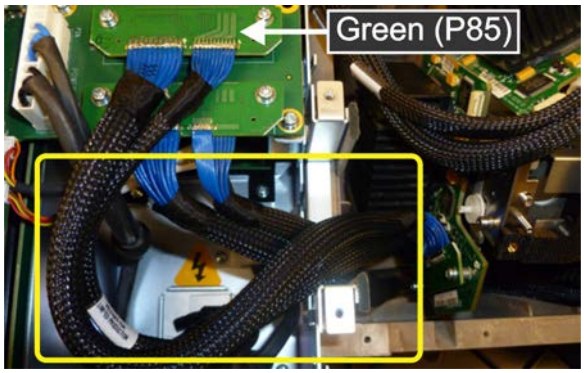
1. Attach and secure the three light engine signal cables to the panel driver.
2. Loosen the three screws that hold the engine to the shipping plate.

   Do not remove the screws as they are used to fasten the light engine to the base.
3. Lower the light engine onto the optical assembly base.
4. Align the light engine dowel pin holes to the dowels on the base. Ensure the engine sits flat on the three pads on the base.
5. Make sure the green formatter board is not touching the optical housing.
6. Make sure the engine is sitting flat then tighten the three light engine screws.
7. Route signal cables as follows:
   a) Red Satellite Cable (P84)—Route along bottom of engine compartment and up behind the green satellite. Secure to the panel driver with two screws.

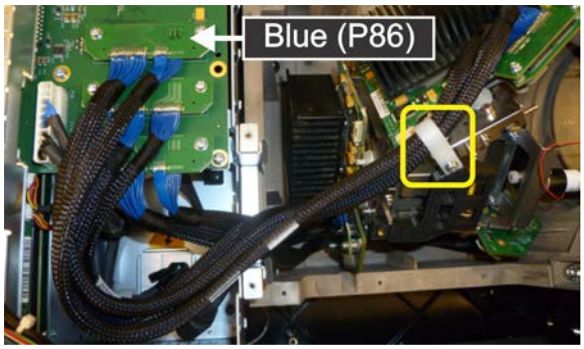
      Keep clear of red heat sink.



b) Green Satellite Cable (P85)—Route directly to the panel driver and secure with two screws.



c) Blue Satellite Cable (P86)—Route over top of the light engine through the P-clip and secure to the panel driver with two screws.



8. To reconnect the remaining assemblies, compete steps 9 to 1 in *Removing the light engine* (on page 83).

Lens mount components

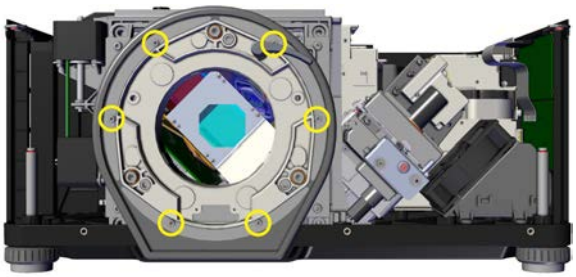
The lens mount provides a means of securing a projection lens to the projector.

Remove the rubber lens mount dust boot

The rubber lens mount dust boot is located at the front of the projector. This dust boot serves as a seal between the front cover and the lens mount.

Estimated replacement time: 7 minutes.

1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Remove the six screws securing the dust boot to the lens mount.



4. Remove the dust boot.
5. To re-install, follow these steps in reverse order.

Removing the lens mount

The lens mount, located at the front of the projector is an assembly of mechanical and electrical components that securely holds and positions the projection lens.

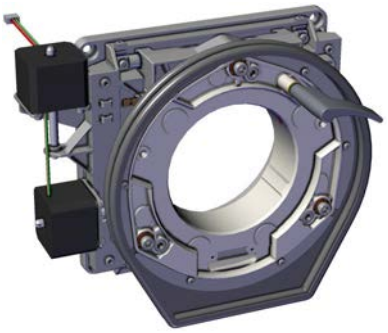
Two motors are attached to the lens mount:

- One for vertical adjustment
- One for horizontal adjustment

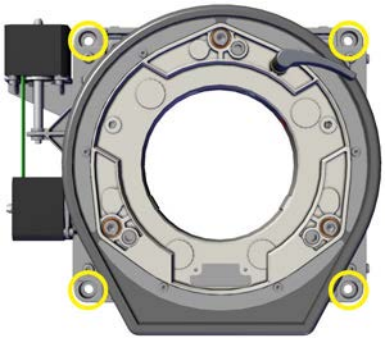
The axes of motion are guided by linear shafts and bushings designed to reduce vibration and unintended motion. Two wires for each adjustment run to the panel driver, the horizontal stepper and position wires and the vertical stepper and position wires. A wire runs to the panel driver to control the focus and zoom options of the lens mount.

A mounting plate, fixed to the lens and magnets within the lens mount, assists in locating the lens against the alignment pads.

Estimated replacement time: 19 minutes.



1. Adjust the lens offsets until the lens mount is centered.
2. *Remove the top cover* (on page 45).
3. *Remove the front cover* (on page 48).
4. Disconnect the J61, J68, J67, J63, and J64 wires from the panel driver.
5. Release the two cable clips securing the wires.
6. Remove the four screws from the corners of the lens mount.



7. Remove the lens mount.

   The horizontal and vertical adjustment have posts that the motors sit on; they look like manual slotted adjustment screws. They are not adjustment screws. If these posts are cranked with a slotted screw driver major damage to the lens mount occurs.
8. To re-install, follow these steps in reverse order.

Printed circuit boards and sensors

Printed circuit boards (PCB) mechanically support and electrically connect to the projector components. Sensors convert information such as temperature, light, and communication into electrical signals.

Removing the processor board

Complete the following procedure to remove the processor board.

Estimated replacement time: 2 minutes.

1. Unscrew the captive screws.
2. Pull on the processor board clips to release the board from the PBP.
3. Slide the processor board out along the guides.
4. To re-install, follow these steps in reverse order.

Removing the front infrared (IR) sensor

The front IR sensor board receives command codes from the IR remote to control the projector operation. The front IR sensor is located on the inside of the front cover. The printed circuit board (PCB) is held by two small screws to the front cover.

Estimated replacement time: 6 minutes

1. *Remove the top cover* (on page 45).
2. *Remove the front cover* (on page 48).
3. Remove the two small screws from the IR PCB
4. Remove the front IR sensor PCB.
5. To re-install, follow these steps in reverse order.

Removing the rear infrared (IR) sensor

The rear IR sensor is located under the top cover at the rear of the projector, above the input panel.

Estimated replacement time: 5 minutes

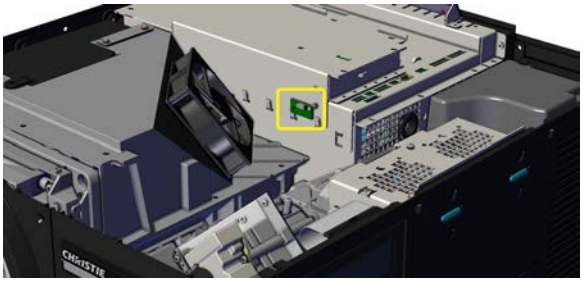
1. *Remove the top cover* (on page 45).
2. Remove the IR harness **J80** from the IR printed circuit board (PCB).
3. Remove the four screws from the IR PCB.

4. Remove the IR sensor.
5. To re-install, follow these steps in reverse order.

Removing the remote temperature sensor module (RTSM) #4

This sensor relays the temperature of the exhaust from the light engine. It is located on the outside of the engine housing across from the exhaust fan, attached to the card cage by one screw

Estimated replacement time: 4 minutes.



1. *Remove the top cover* (on page 45).
2. Disconnect the RTSM thermal harness **J53** from the printed circuit board (PCB).
3. Remove the one screw securing the PCB.
4. Remove the RTSM PCB.
5. To re-install, follow these steps in reverse order.

Removing the remote temperature sensor module (RTSM) #3

This sensor relays the temperature from the light engine intake. It is located inside the light engine intake duct. Access to remove the sensor is through the front intake air filter cover. The RTSM PCB is attached by one screw.

Estimated replacement time: 6 minutes.

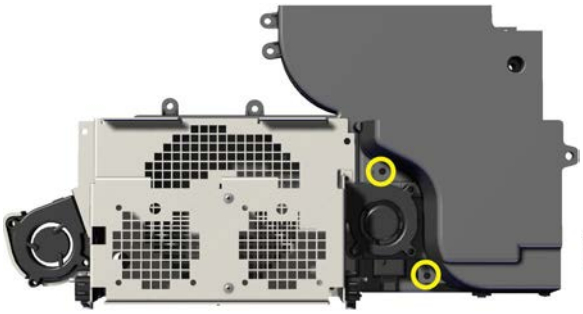
1. Remove the front intake air filter cover.
2. Disconnect the RTSM thermal harness J54.
3. Remove the one screw securing the printed circuit board (PCB).
4. Remove the RTSM PCB.
5. To re-install, follow these steps in reverse order.

Removing the remote temperature sensor module (RTSM) #2

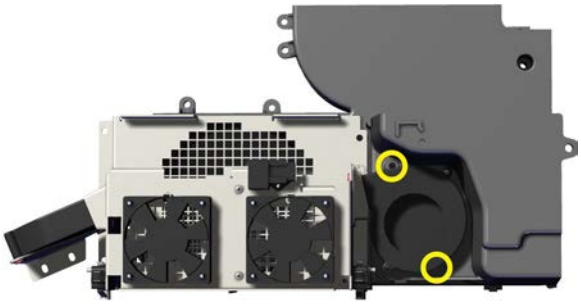
The RTSM sensor relays the temperature from the lamp and power supply exhaust duct. It is located inside a trap door beside the lamp compartment in the exhaust duct.

Estimated replacement time: 10 minutes.

1. *Remove the top cover* (on page 45).
2. Remove the two screws from the card cage exhaust duct.

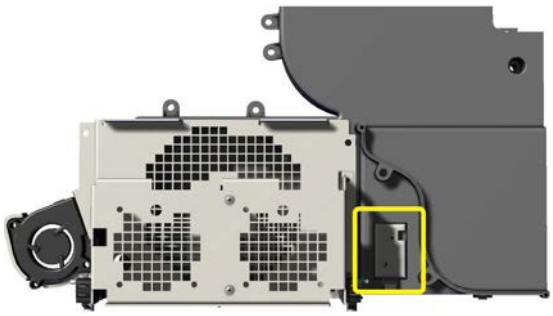


200W and 350W

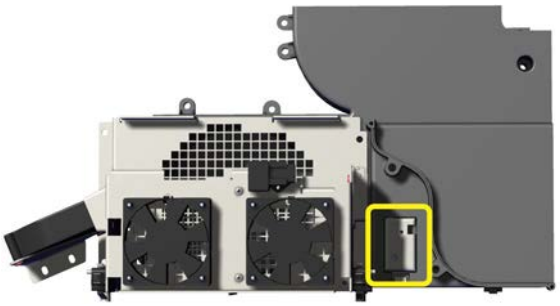


450W

3. Remove the exhaust duct (fan #3 is removed with duct).
4. Unclip the trap door and remove the assembly



200W and 350W



450W

5. Disconnect J53 from the RTSM.
6. Remove the one screw securing the PCB to the trap door.
7. Remove the RTSM PCB.
8. To re-install, follow these steps in reverse order.

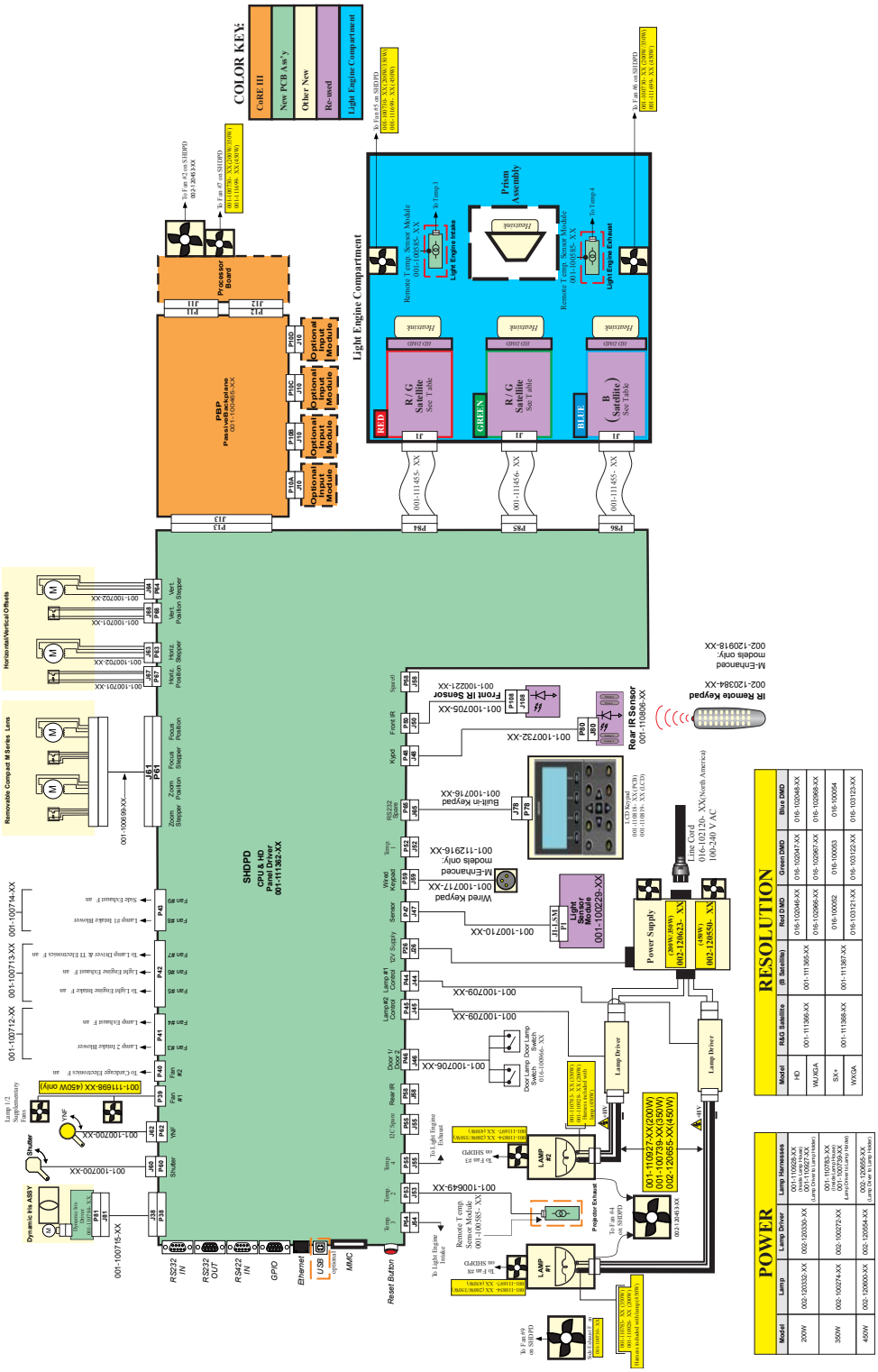
   When installing the exhaust duct, ensure that the duct pins align with the holes for a snug fit. Make sure all wiring is on top of the duct and not caught inside the duct.

Interconnections

The M Series interconnect diagram illustrates the path of electrical connections between modules. Manufacturer's part numbers are included.

Part numbers are subject to change.

Interconnect diagram



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