
Technical Bulletin

Cleaning projector optics

This document provides information and procedures for cleaning optical components in the Christie cinema projectors identified in the products list.

Only these optical components can be cleaned:

- reflector
- integrator
- light engine prism
- projection lens
- UV filter
- IOS Lens 5

The procedures in this document must be performed by service personnel trained by Christie following consultation with Christie support. Failure to follow this recommendation could result in damage to the projector and void the warranty.

Typically, optical components do not need to be cleaned frequently if they are installed and operated in a location meeting or exceeding the environmental standard recommended by Christie. Christie recommends installing and operating all cinema projectors in an environment meeting or exceeding Underwriters Laboratories (UL) standard 609.50 Pollution Degree 2 and ISO Class 9 Standard for Office Environments.

Affected products

The following products are affected.

- | | | |
|----------------------|----------------------|-------------------------|
| • Christie CP2000 | • Christie CP2210 | • Christie CP4220 |
| • Christie CP2000-X | • Christie CP2215 | • Christie CP4230 |
| • Christie CP2000-XB | • Christie CP2220 | • Christie CP4420-Xe |
| • Christie CP2000-SB | • Christie CP2230 | • Christie Solaria One |
| • Christie CP2000-ZX | • Christie CP2415-Xe | • Christie Solaria One+ |
| • Christie CP2208 | • Christie CP2420-Xe | |

Safety precautions

When cleaning optical components, observe these important safety rules to avoid personal injury or damage to the projector.



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.



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

- Only Christie qualified technicians are permitted to open product enclosures.



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

- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.
- Only use cleaning solutions recommended by Christie. All other cleaning solutions may cause product damage and will void the warranty.

Recommended supplies

Use the following recommended tools to clean the optics.

- Powder-free N-DEX (nitrile) or latex gloves
- Soft camel hair brush
- Dust-free blower, air bulb, or a canned air duster without additives, such as Techspray 1671-10S Ultra-Pure Duster
- Lint-free lens tissue, such as Lensx 90® tissue or Newport Optics cleaning tissue
- Isopropyl alcohol, ACS Reagent Grade 99.9% (for cleaning the reflector)
- Acetone, ACS Reagent Grade (for cleaning the light engine prism, UV filter, projection lens, integrator, and IOS Lens 5)
Acceptable substitute: Klean-Strip 100% Acetone
- Microfiber cloth (for the lens only)
- Optical grade cotton swabs with wooden stems
- Sticklers Fiber Optic Cleaner (can be used on all optical components)
- A bright, portable illumination device such as an LED flashlight

Removing and cleaning projector optics

For improving brightness and contrast, the procedures are organized from most to least effective.

Cleaning procedures should be performed in a clean, well lit, and dust-free environment meeting or exceeding Underwriters Laboratories (UL) standard 609.50 and ISO Class 9 Standard for Office Environments.

For procedures on removing optical components, see the projector service manual. If the recommended cleaning supplies described in the procedures are unavailable in your area, contact Christie Technical Support.



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

- Always wear clean, powder-free latex gloves when handling optical components.
- Always handle optics by their edges.
- Handling optics increases the risk of damage. You should clean optics only when necessary.
- Only use solvents if dirt remains after dusting with compressed air.
- Do not reuse lens tissues. Use a clean tissue for each cleaning attempt.
- When using Techspray 1671-10S, do not shake the can prior to use.

Preparing the projector for service

Before performing any service procedure, make sure the projector is turned off and disconnected from power.

- Turn off the lamp and projector.
- Allow the projector to cool for a minimum of 15 minutes.
- Disconnect the projector from AC power.

Cleaning the light engine prism

If the entire light engine requires cleaning, contact Christie Technical Support.

If you do not have additive-free compressed air, use an air bulb or a camel hair brush to remove dust and debris. If you have questions about the cleaning methodology, contact Christie Technical Support.

1. Turn off the light source and cool the projector for at least 15 minutes.
2. Turn off the projector and disconnect it from AC power.
3. Remove the light engine and set it on a clean, lint-free cloth.
The prism is easily damaged. Handle with care. For removal procedures, see the projector Service manual.
4. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the optical component and press the trigger rapidly three times to clear any possible impurities from the tube.
5. To clean the light engine prism, press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the optical component.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
6. If the prism still appears dirty:
 - a) Put on a pair of powder-free latex gloves.
 - b) Dampen a clean, folded, lint-free cloth with acetone and wipe the surface of the prism carefully with the smooth portion of the cloth that has no folds or creases.
Do not apply pressure with your fingers. Use only the tension in the folded cloth.
 - c) Inspect the prism surface with a bright light and verify it is streak free.
 - d) If streaks are present, repeat step b.
7. Reassemble the light engine and the projector.
8. Connect the projector to AC power.

Cleaning the UV filter

Learn the steps for cleaning or replacing the projector UV filter.

If you do not have additive-free compressed air, use an air bulb or a camel hair brush to remove the debris. If you have questions about the cleaning methodology, contact Christie Technical Support.

1. Turn off the light source and cool the projector for at least 15 minutes.
2. Turn off the projector and disconnect it from AC power.

3. Remove the lamp.
For removal procedures, see the projector Service manual.
4. Put on a pair of powder-free latex gloves.
5. Remove the UV filter and set on a clean, lint free cloth. For removal procedures, see the projector Service manual.
If the filter is yellow, replace it. When replacing the UV filter make sure the directional arrow on the filter faces the reflector.
6. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the UV filter, and press the trigger rapidly three times to clear any possible impurities from the tube.
7. To clean the UV filter, hold the filter by its edges and press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the UV filter.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the UV filter.
8. Turn the UV filter over and repeat step 6.
9. If the UV filter still appears dirty:
 - a) Place the filter on a clean and dry lint free cloth.
 - b) Dampen a clean, folded lint free cloth with acetone and wipe the surface carefully.
Do not apply pressure with your fingers. Use only the tension in the folded cloth.
 - c) Allow the solvent to dry.
 - d) Turn the UV filter over and repeat step b.
10. Reassemble the projector and connect it to AC power.

Cleaning the projection lens

Learn the steps for cleaning the input and output ends of the projection lens.

If you do not have additive-free compressed air, use an air bulb or a camel hair brush to remove dust and debris. For any questions about the cleaning methodology, contact Christie Technical Support.

1. Turn off the light source and cool the projector for at least 15 minutes.
2. Turn off the projector and disconnect it from AC power.
3. Put on a pair of powder-free latex gloves.
4. Remove the projection lens from the projector and place it on a flat, stable surface.
For removal procedures, see the projector Service manual.
5. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the optical component, and press the trigger rapidly three times to clear any possible impurities from the tube.
6. To clean the input end of the projection lens, press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the optical component.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
7. If the input end of the lens still appears dirty:
 - a) Dampen a clean, folded lint-free cloth with acetone and wipe the surface of the input end of the lens carefully with the smooth portion of the cloth that has no folds or creases.

- b) Inspect the input end of the lens with a bright light and verify no streaks appear.
 - c) If streaks are present, repeat step a.
8. Re-install the lens.
9. To clean the output end of the projection lens, press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the surface of the lens.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
10. If the output end of the lens still appears dirty:
 - a) Dampen a clean, folded lint free cloth with acetone and wipe the surface of the output end of the lens carefully with the smooth portion of the cloth that has no folds or creases.
 - b) Inspect the output end of the lens with a bright light and verify no streaks appear.
 - c) If streaks are present, repeat step a.
11. Re-assemble the projector and connect it to AC power.

Cleaning the reflector

Clean the reflector with care. The reflector is fragile and is easily damaged.

The reflector must be cleaned with isopropyl alcohol, ACS Reagent Grade 99.9%. Other solvents can damage the reflective coating on the reflector. If you do not have additive-free compressed air, use an air bulb or a camel hair brush to remove the debris. If you have questions about the cleaning methodology, contact Christie Technical Support.

1. Turn off the light source and cool the projector for at least 15 minutes.
2. Turn off the projector and disconnect it from AC power.
3. Remove the lamp.
For removal procedures, see the projector Service manual.
4. Remove the reflector.
For removal procedures, see the projector Service manual.
5. Put on a pair of powder-free latex gloves.
6. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the optical component and press the trigger rapidly three times to clear any possible impurities from the tube.
7. To clean the reflector, press the trigger of the canister rapidly multiple times, 15.2 cm (6 inches) above the optical component.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
8. If the reflector still appears dirty:
 - a) Fold a lint free cloth and wipe the remaining dust particles off the inside of the reflector with the smooth portion of the cloth that has no folds or creases.
Do not apply pressure with your fingers. Instead, use only the tension in the folded cloth to remove the dust.
 - b) If significant dust remains on the reflector surface, dampen a clean lint free cloth with isopropyl alcohol and wipe the surface carefully.

- c) Fold a clean, dry, lint free cloth and wipe the remaining alcohol off the reflector with the smooth portion of the cloth that has no folds or creases.
9. Reassemble the projector and connect it to AC power.

Cleaning the integrator

Clean the integrator with care. The integrator is fragile and is easily damaged.



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

- This procedure must be performed by Christie qualified technicians.

If you do not have additive-free compressed air, use an air bulb or a camel hair brush to remove the debris. If you have questions about the cleaning methodology, contact Christie Technical Support.

1. Turn off the light source and cool the projector for at least 15 minutes.
2. Turn off the projector and disconnect it from AC power.
3. Remove the integrator.
For removal procedures, see the projector Service manual.
4. Put on a pair of powder-free latex gloves.
5. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the optical component and press the trigger rapidly three times to clear any possible impurities from the tube.
6. To clean the integrator, press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the optical component.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
7. If the input end of the integrator still appears dirty:
 - a) Remove the input aperture.
 - b) Dampen a clean, folded lint free cloth with acetone and wipe the surface of the input end of the integrator carefully with the smooth portion of the cloth that has no folds or creases.
 - c) Inspect the input end of the integrator with a bright light and verify no streaks appear.
 - d) If streaks are present, repeat step b.
 - e) Carefully place the input aperture on the integrator rod and make sure there is enough room around the integrator rod and aperture to prevent damage to the corners.
8. Reassemble the projector and connect it to AC power.
9. Align the integrator.
For alignment procedures, see the projector Service manual.

Cleaning illumination optical system (IOS) Lens 5

Lens 5 (L5) is part of the illumination optical system (IOS) in the light tube assembly located at the vignetting aperture, directly underneath the light engine.

Consider cleaning the L5 lens only if attempting to resolve a loss of brightness by cleaning or replacing the projector light engine.

1. Prepare the projector for service. For more information, see *Preparing the projector for service* (on page 3).
2. Remove the light engine. For removal procedures, see the projector Service manual.
3. Put on a pair of powder-free latex gloves.
4. To prepare the Techspray 1671-10S canister for use, firmly attach the red output tube to the output nozzle on the canister, point the canister away from the optical component, and press the trigger rapidly three times to clear any possible impurities from the tube.
5. To clean the L5 lens, press the trigger of the Techspray canister rapidly three times, 15.2 cm (6 inches) above the optical component.
You must hold the Techspray canister vertically. Holding the canister at an angle can release liquid refrigerant and contaminate the projector optics.
6. If the lens still appears dirty:
 - a) Take a lint free tissue and fold the length in half, and then the width in half.
 - b) Dispense a few drops of acetone onto the folded tissue.
 - c) Place the wet portion of the lens tissue onto the lens.
 - d) With gentle pressure, wipe across the surface in one direction.
 - e) Inspect the cleaned surface with the flashlight.
7. Repeat step 6 as necessary, using a new lint free tissue each time until the lens is clean.

Supporting documentation

This table lists the part numbers for the projector Service manuals.

Projector model	Service manual part number
CP2000	020-100213-XX
CP2000-X	013-100197-XX
CP2000-XB	013-100197-XX
CP2000-SB	013-100502-XX
CP2000-ZX	020-100006-XX
CP2208	020-101917-XX
CP2210	020-100556-XX
CP2215	020-101226-XX
CP2220	020-100472-XX

Projector model	Service manual part number
CP2230	020-100562-XX
CP2415-Xe	020-103582-XX
CP2420-Xe	020-103566-XX
CP4220	020-100691-XX
CP4230	020-100622-XX
CP4420-Xe	020-103566-XX
Solaria One	020-101039-XX
Solaria One+	020-101039-XX

Documentation is also available on the Christie *website*.

Technical support

Technical support for Christie Cinema products is available at:

- *Support.cinema@christiedigital.com*
- +1-877-334-4267
- Christie Professional Services: +1-800-550-3061 or *NOC@christiedigital.com*