Maintaining chiller coolant levels

This document provides instructions for refilling the chillers used for laser projectors.

Follow these procedures and use in conjunction with the Coolant Refill Calculator (P/N: 001-114643-XX) for refilling chillers with coolant. The calculator helps correct the Propylene Glycol concentrations of the coolant between 16% to 25%. Contact technical support to access the calculator application.

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

- Use protective eye wear and gloves. Follow workplace guidelines for using personal protective equipment when installing, cleaning, and servicing the product.

The coolant levels and concentrations should be checked per the following Preventative Maintenance Schedules:

- CP4440/50 (P/N: 010-108507-XX)
- CP4445/55 (P/N: 010-109412-XX)
- E3LH-TPLS (P/N: 010-108224-XX)

Affected Products

The following products are affected:

- E3LH TPLS
- CP4440-RGB
- CP4445-RGB
- CP4450-RGB
- CP4455-RGB

Required tools

Make sure the following tools are available during the maintenance.

These items are required for both Teyu, Thermal Care, and SMC systems.

- Tape measure
- Refractometer and eye dropper
- 3/8 inch ID hose, approximately 6 feet long
- ½ inch male BSPT to 3/8 inch hose barb
- Graduated beaker
- Bucket

- Funnel
- Safety gloves
- Safety goggles
- Spill kit
- Distilled water
- LIQ-702 coolant Christie P/N: 163-130105-01
- UN rated container
- Non-hazardous labels
- SDS Sheet for LIQ-702 coolant

Additional items required for Teyu chillers.

- • LQ6 quick disconnect kit Christie P/N: 003-007009-01
- • ½ inch male BSPT to 3/8-inch hose barb

Filling the SMC HRS040 chiller from empty

Follow this procedure to fill a chiller/projector system which contains no coolant.

1. Measure the total length of the hose connecting the chiller to the projector, including the outlet and inlet hoses.
2. Open the Chiller Refill Calculator and navigate to sheet LIQ-702 Empty.
3. Select the chiller, projector, and unit settings from the menus.
4. Enter the measured hose length in its corresponding cell.
5. Remove the reservoir cap from the chiller.
6. Using the funnel, fill the chiller with the indicated quantities of LIQ-702 coolant and distilled water until the coolant reaches the full point.
7. Turn on the chiller using the **Power** switch.

8. Select the **RUN/STOP** button to automatically run the coolant.

   Coolant fills the hose and projector, so the quantity in the reservoir goes down. If necessary, remove the reservoir cap to eliminate large air bubbles.
9. If a leakage occurs due to faulty piping including an opened fitting of the external piping, stop the operation of the pump by selecting the **RUN/STOP** button and fix the leak.
10. If the AL01 alarm (tank fluid level low) occurs, select the **RESET** button (select the **Up** and **Down** buttons simultaneously) to stop the alarm buzzer.

11. Finish topping up the chiller with the remainder of coolant indicated by the calculator.
12. Repeat steps 5 to 11 until the reservoir is full.
13. Check for leaks and tighten connection points where a leak exists.
14. Check the surface of the coolant to make sure it is near the full point

    Propylene Glycol measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

Refilling the SMC HRS040 chiller

Follow this procedure to make sure the concentration of Propylene Glycol (PG) in the coolant is between 16% and 25%.

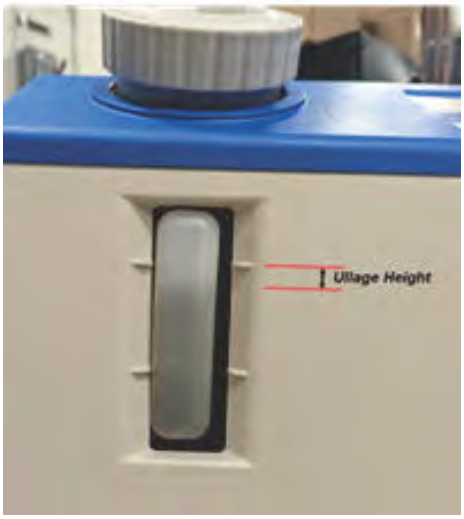
1. Make sure the chiller and projector are powered off.
2. Take a sample of coolant by slowly and carefully opening the drain port.

   Refer to the *Refractometer User Manual* for instructions to retrieve PG measurements correctly.
3. Use the refractometer to measure the coolant freezing point.

   Make sure to use the Propylene Glycol side of the refractometer scale.

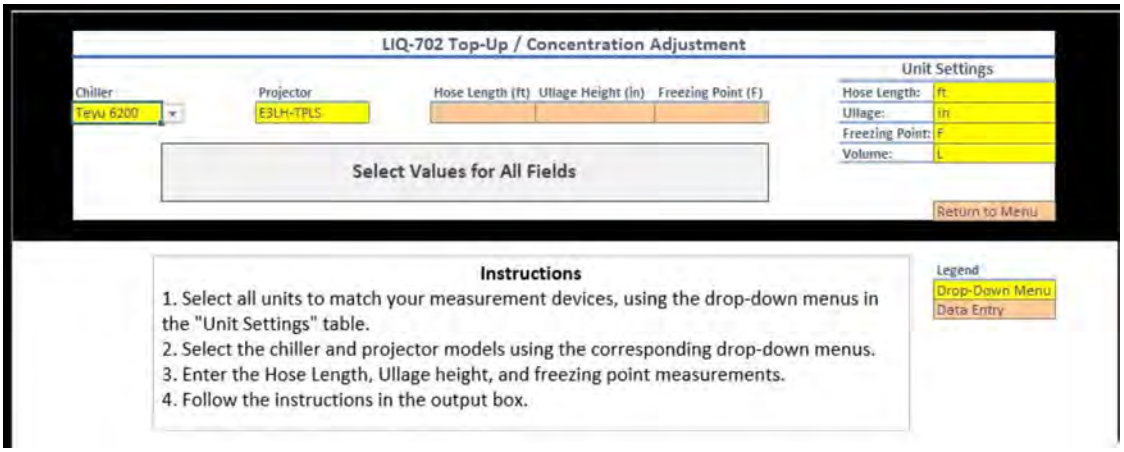
4. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
5. Measure the ullage height on the coolant gage.

   This is the distance from the surface of the coolant to the "H" mark.



6. Open the Chiller Refill Calculator and navigate to the sheet LIQ702 Top-Up.
7. Follow the instructions for using the Chiller Refill Calculator in the excel spreadsheet.

   Below is an example of the spreadsheet. The orange field names populate after all yellow fields are successfully filled in.



8. If the calculator says to drain the chiller to a certain ullage, refer to the *Reduce Coolant Level* section in this document and drain until the required ullage is reached.
9. Using the graduated beaker and the funnel, fill the chiller with the quantities of LIQ-702 and distilled water indicated in the calculator.

   Do not fill the chiller above the "H" mark.
10. Place the cap back on the coolant reservoir.
11. Make sure all hoses are securely connected.
12. Turn on the chiller using the **Power** switch.
13. Select the **RUN/STOP** button to automatically run the coolant.
14. Check the surface of the coolant to make sure it is near the "H" mark.

    PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

Reducing the SMC HRS040 chiller coolant level

Follow this procedure to remove coolant from a chiller reservoir. Reducing the coolant level does not completely empty the system of coolant. Coolant remains in the hoses, the projector, the pump, and the filter.

1. Make sure the chiller and projector are powered off.
2. Disconnect the outlet and return hoses from the chiller.
3. Place a container underneath the drain outlet.
   The capacity of the container should be approximately 10 L.
4. Remove the drain plug on the drain port on the piping to drain the fluid.
   An O-ring is used to seal the drain plug. Make sure not to damage the O-ring.
5. Allow the coolant to drain until it reaches the required level.
   If the flow is slow, remove the tank lid to allow air ingress.
6. Re-install the drain plug and secure the plug using the provided clip.
7. Remove the coolant from the site in a properly labeled UN-rated container.
   Observe all environmental laws and regulations for proper disposal.

Refilling the Teyu 6200 Chiller

Follow this procedure to make sure the concentration of Propylene Glycol in the coolant is between 16% and 25%.

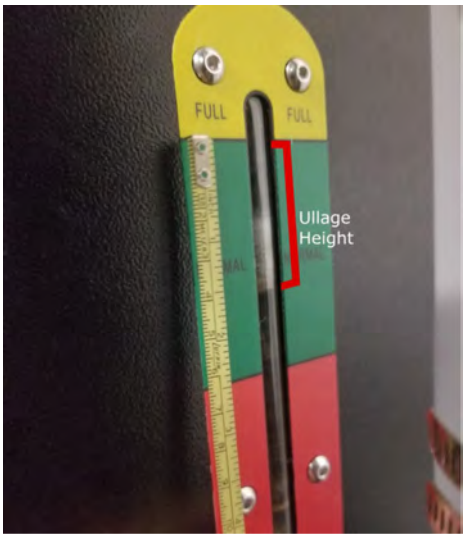
1. Make sure the chiller and projector are powered off.
2. Take a sample of coolant by slowly and carefully opening the drain port.
   Refer to the *Refractometer User Manual* for instructions to retrieve PG measurements correctly.

3. Use the refractometer to measure the coolant freezing point.

Make sure to use the Propylene Glycol side of the refractometer scale.

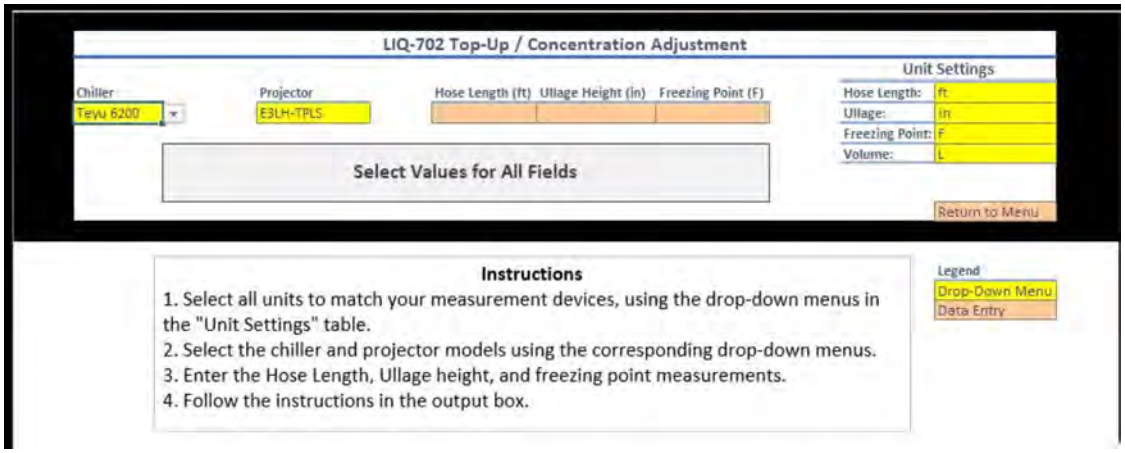
4. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
5. Measure the ullage height on the coolant gage.

   This is the distance from the surface of the coolant to the full point on the sticker.



6. Open the Chiller Refill Calculator and navigate to the page named LIQ702 Top-Up.
7. Follow the instructions for using the Chiller Refill Calculator in the excel spreadsheet.

   Below is an example of the spreadsheet. The orange field names populate after all yellow fields are successfully filled in.



8. If the calculator says to drain the chiller to a certain ullage, refer to the *Reduce Coolant Level* section in this document and drain until the required ullage is reached.
9. Using the graduated beaker and the funnel, fill the chiller with the quantities of LIQ-702 and distilled water indicated in the calculator.

   Do not fill the chiller above the top of the coolant gage.
10. Place the cap back on the coolant reservoir.
11. Make sure all hoses are securely connected and any valves in the coolant loop are open.
12. Run the chiller.

    Starting up may take several tries due to frothing.
13. Check the surface of the coolant to make sure it is near the full point.

    PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

Reducing the Teyu 6200 chiller coolant level

Follow this procedure to remove coolant from a chiller reservoir. Reducing the coolant level does not completely empty the system of coolant. Coolant remains in the hoses, the projector, the pump, and the filter.

1. Make sure the chiller and projector are powered off.
2. Screw the hose barb into the threaded section of the chiller drain port.

   Firmly press one end of the 3/8 inch hose over the barb.
3. Place the other end of the hose at the bottom of a clean container or bucket.

4. Open the valve on the drain port and allow the coolant to drain until it reaches the required level.

   If flow is slow, remove the reservoir cap to allow air ingress.
5. Close the drain port, drain the 3/8 inch hose, and remove the hose barb from the chiller.
6. Remove the coolant from the site in a properly labeled UN-rated container.

   Observe all environmental laws and regulations for proper disposal.

Filling the Teyu 6200 chiller from empty

Follow this procedure to fill a chiller/projector system which contains no coolant.

1. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
2. Open the Chiller Refill Calculator and navigate to the page named LIQ-702 Fill from Empty.
3. Select the chiller, projector, and unit settings from the menus.
4. Enter the measured hose length in its corresponding cell.
5. Remove the reservoir cap from the chiller.
6. Using the funnel, fill the chiller with the indicated quantities of LIQ-702 coolant and distilled water until the coolant reaches the full point.
7. Run the chiller for a few seconds.

   Coolant fills the hose and projector, so the quantity in the reservoir goes down. If necessary, remove the reservoir cap to eliminate large air bubbles.
8. Finish topping up the chiller with the remainder of coolant indicated by the calculator.
9. Check the surface of the coolant to make sure it is near the full point

   PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

Refilling the Teyu 6300 Chiller

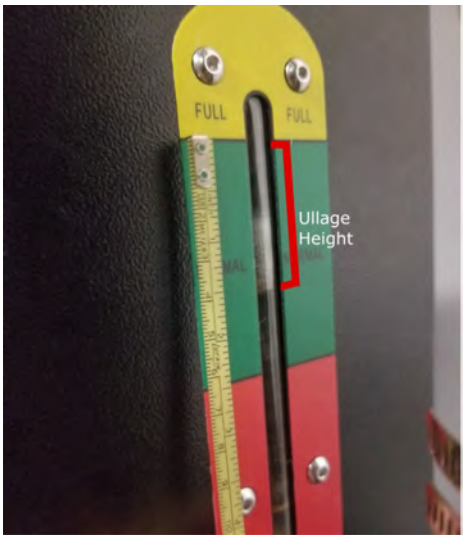
Follow this procedure for topping up a chiller that has lost coolant due to evaporation. Follow these procedures to make sure the concentration of Propylene Glycol in the coolant is between 16% and 25%.

1. Make sure the chiller and projector are powered off.
2. Take a sample of coolant by slowly and carefully opening the drain port.

3. Use the refractometer to measure the coolant freezing point.
   Refer to the *Refractometer User Manual* for instructions to retrieve PG measurements correctly.
   Make sure to use the Propylene Glycol side of the refractometer scale.

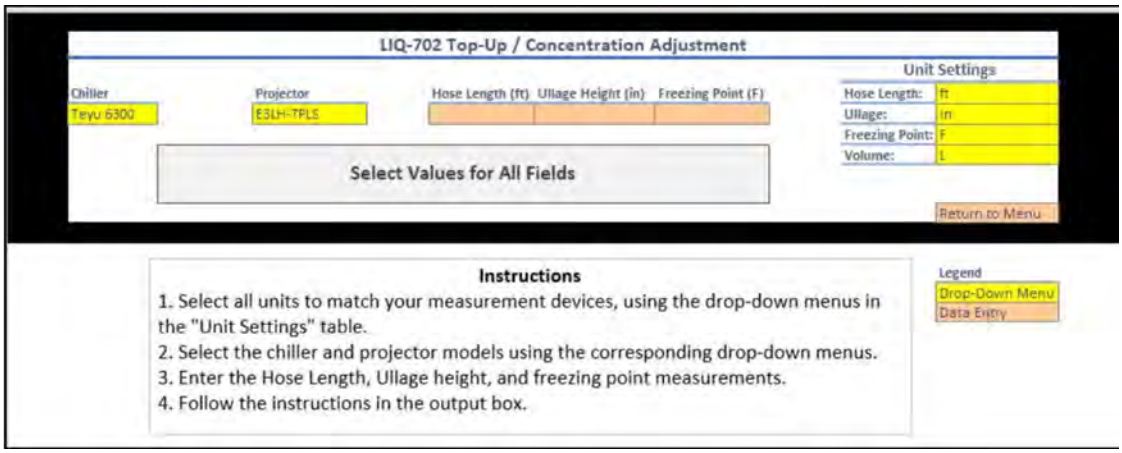
4. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
5. Measure the ullage height on the coolant gage.

This is the distance from the surface of the coolant to the full point on the sticker.



6. Open the Chiller Refill Calculator and navigate to the page named LIQ702 Top-Up.
7. Follow the instructions for using the Chiller Refill Calculator in the excel spreadsheet.

   Below is an example of the spreadsheet. The orange field names populate after all yellow fields are successfully filled in.



8. If the calculator says to drain the chiller to a certain ullage, refer to the *Reduce Coolant Level* section in this document and drain until the required ullage is reached.
9. Using the graduated beaker and the funnel, fill the chiller with the quantities of LIQ-702 and distilled water indicated in the calculator.

   Do not fill the chiller above the top of the coolant gage.
10. Place the cap back on the coolant reservoir.
11. Make sure all hoses are securely connected and any valves in the coolant loop are open.
12. Run the chiller.

    Starting up may take several tries due to frothing.
13. Check the surface of the coolant to make sure it is near the full point.

    PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

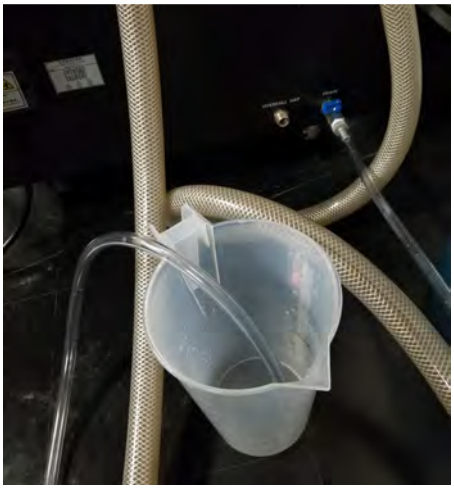
Reducing the Teyu 6300 chiller coolant level

Follow this procedure to remove coolant from a chiller reservoir.

Reducing the coolant level does not completely empty the system of coolant. Coolant will remain in the hoses, the projector, the pump and the filter.

1. Make sure the chiller and projector are powered off.
2. Screw the hose barb into the threaded section of the chiller drain port.

   Firmly press one end of the 3/8 inch hose over the barb.
3. Place the other end of the hose at the bottom of a clean container or bucket.



4. Open the valve on the drain port and allow coolant to drain until it reaches the required level.
5. Close the drain port, drain the 3/8 inch hose, and remove the hose barb from the chiller.
6. Remove the coolant from the site in a properly labeled UN-rated container.

   Observe all environmental laws and regulations for proper disposal.

Filling the Teyu 6300 chiller from empty

Follow this procedure to fill a chiller/projector system which contains no coolant.

1. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
2. Open the Chiller Refill Calculator and navigate to the page named LIQ-702 Fill from Empty.
3. Select the chiller, projector, and unit settings from the menus.
4. Enter the measured hose length in its corresponding cell.
5. Remove the reservoir cap from the chiller.
6. Using the funnel, fill the chiller with the indicated quantities of LIQ-702 coolant and distilled water until the coolant reaches the full point.
7. Run the chiller for a few seconds.

   Partially choking the flow at startup may be required to prevent a pump overload error. Coolant fills the hose and projector, so the quantity in the reservoir goes down.

8. Finish topping up the chiller with the remainder of coolant indicated by the calculator.
9. Check the surface of the coolant to make sure it is near the full point

   PG measurements taken after refilling are inaccurate so it takes time (sometimes days) for the coolant and distilled water to mix.

Refilling the Thermal Care EQ2A02 Chiller

Follow this procedure to top up a chiller that has lost coolant due to evaporation. Follow these procedures to make sure the concentration of Propylene Glycol in the coolant is between 16% and 25%.

1. Make sure the chiller and projector are powered off.
2. Remove the side panel of the chiller and the cover of the coolant reservoir.

3. Take a sample of the coolant from the reservoir.

4. Use the refractometer to measure the coolant freezing point.

Refer to the *Refractometer User Manual* for instructions to retrieve PG measurements correctly.

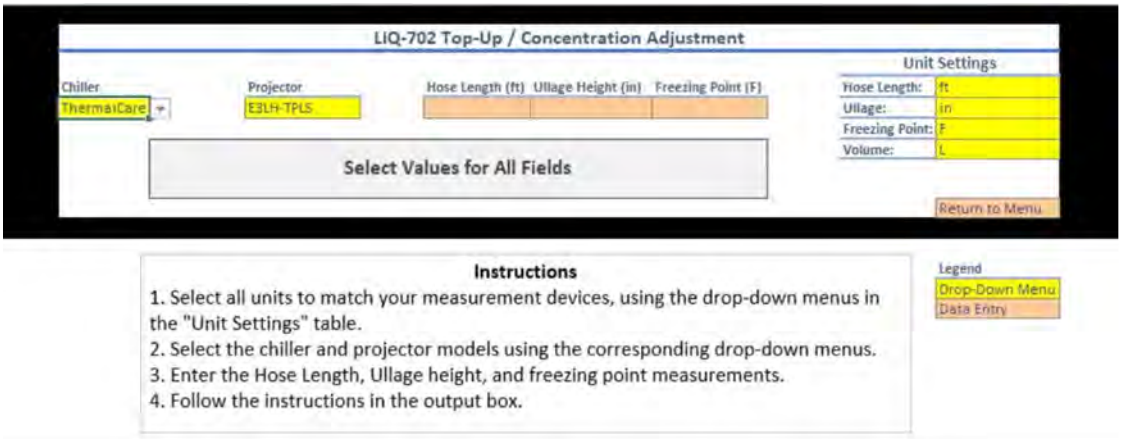
Make sure to use the Propylene Glycol side of the refractometer scale.

5. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
6. Measure the ullage height on the coolant gage.

   This is the distance from the surface of the coolant to the top of the clip securing the sight glass.

7. Open the Chiller Refill Calculator and navigate to the page named LIQ702 Top-Up.
8. Instructions for using the Chiller Refill Calculator are in the excel spreadsheet.

   Below is an example of the spreadsheet. The orange field names populate after all yellow fields are successfully filled in.



9. If the calculator says to drain the chiller to a certain ullage, refer to the *Reduce Coolant Level* section in this document and drain until the required ullage is reached.
10. Using the graduated beaker and the funnel, fill the chiller with the quantities of LIQ-702 and distilled water indicated in the calculator.

    Do not fill the chiller above the top of the coolant gage.

11. Place the cap back on the coolant reservoir.
12. Make sure all hoses are securely connected and any valves in the coolant loop are open.
13. Run the chiller.
14. Check the surface of the coolant to make sure it is near the full point.

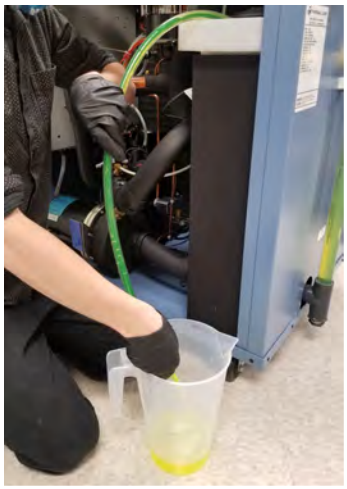
    PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

Reducing the Thermal Care EQ2A02 chiller coolant level

Follow this procedure to remove coolant from a chiller reservoir. Reducing the coolant level does not completely empty the system of coolant. Coolant remains in the hoses, the projector, the pump and the filter.

1. Make sure the chiller and projector are powered off.
2. Remove the side panel and coolant reservoir cover from the chiller.
3. Draw a siphon in the coolant reservoir using the 3/8 inch hose.
   a) Place one end of the hose at the bottom of the reservoir and make sure it stays there.
   b) Completely submerge the hose so it fills with coolant and cover the end with your thumb.

   c) With the hose full of coolant, bring the covered end to the bottom of a clean bucket. The bucket must be below the chiller.
   d) Uncover the end of the hose and allow the coolant to drain.



4. Monitor the siphon to make sure the flow continues.

5. Once the coolant in the chiller reaches the required level, stop the siphon.
6. Remove the coolant from the site in a properly labeled UN-rated container.
   Observe all environmental laws and regulations for proper disposal.

Filling the Thermal Care EQ2A02 chiller from empty

Follow this procedure to fill a chiller/projector system which contains no coolant.

1. Measure the total length of hose connecting the chiller to the projector, including the outlet and inlet hoses.
2. Open the Chiller Refill Calculator and navigate to the page named LIQ-702 Fill from Empty.
3. Select the chiller, projector, and unit settings from the menus.
4. Enter the measured hose length in its corresponding cell.
5. Using the funnel, fill the chiller with the indicated quantities of LIQ-702 coolant and distilled water until the coolant reaches the full point.

6. Run the chiller for a few seconds.
   Coolant fills the hose and projector, so the quantity in the reservoir goes down.
7. Finish topping up the chiller with the remainder of coolant indicated by the calculator.
8. Check the surface of the coolant to make sure it is near the full point.
   PG measurements taken after refilling are inaccurate as it takes time (sometimes days) for the coolant and distilled water to mix.

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*