

Dripless Quick Disconnect and Chiller Hose kit instructions for the Mirage SST light source and chiller

Liquid cooling is required for the external laser light source supplied with a Christie Mirage SST projector.

This document provides instructions for connecting the approved chiller equipment to the laser light source. The kit components and fittings are based on the following statements:

- The laser module has inlet and outlet ports measuring 0.5 inch National Pipe Thread (NPT).
- The chiller has inlet and outlet ports measuring 0.5 inch Pipe Thread (PT).
Christie recommends a qualified plumber performs the installation. This must be followed correctly to ensure proper coolant flow.

Affected products

The following products are affected:

- Mirage SST

Required components

The following components are required.

- Christie-supplied light source for a Mirage SST
- Christie-supplied chiller for the Mirage SST
- Christie-supplied Quick Disconnect kit
- Christie recommends using coolant (P/N: 003-006744-XX) mixed with distilled water at a 2:1 ratio

A 10L container of coolant plus 5L of distilled water becomes a 20% propylene glycol mix. After a system has been topped up using the Chiller Refill Calculator (Propylene Glycol mix approximately 20%), only top it up using only distilled water each time going forward. **Do not**

continue to add more approved glycol mix between coolant changes. Never use drinking water.

- A bucket with measurement lines that enables the coolant to be mixed 2:1 with distilled water.







Required tools




The following tools are required.

- Large adjustable wrench
- Pipe wrench
- Standard screwdriver
- 12 inch #2 Philips screwdriver or small 8 mm wrench

Kit components

This section provides information on the individual components of the Chiller kit. Connectors include male and female fittings to prevent incorrect installation.

Description	Quantity	Part
Teflon tape—1/2 inch	1	
Male QD connector—dripless	4	
Female QD connector—dripless	4	
1/2 NPT 90° elbow * The alternate connection could use a quantity of 2 or 4.	2 or 4*	
Stainless Steel male 1/2" PT to 1/2" female NPT connector Note: Supplied with the chiller.	2	
Hoses—one pair is required. Choose option A or B below.		
Option A:		
<ul style="list-style-type: none"> • Pre-fabricated 3/4" ID hose (opaque), rated for >100 PSI operating pressure (>300PSI burst) up to 100' (30 m) length pre terminated with 1/2" female NPT thread connectors on both ends (not swivel type). One of two the hoses shown. 	2	

Description	Quantity	Part
Option B:		
<ul style="list-style-type: none"> Barbed hose adapter 3/4" hose to 1/2" NPT thread (do not use 1/2" barb) 	4	
<ul style="list-style-type: none"> 3/4" ID hose (opaque), rated for minimum >100 PSI operating pressure (>300PSI burst) up to 100' (30 m) length 	2	
<ul style="list-style-type: none"> Crimped hose ends or lined stainless industrial hose clamp (only use the supplied hose clamps) 	4	

Assembling the connectors and coolant lines

Learn the steps for assembling the plumbing fittings and coolant lines.

When assembling the connectors and coolant lines, note the following:

- When connecting two fittings together, apply three to four turns of 1/2 inch Teflon tape to the threads on the male connector to ensure a sealed connection.

Installing the quick disconnects onto the external laser light source

Learn the steps for assembling and installing the fittings for the laser module ports.

- Remove the ball valve assemblies supplied on the remote light source, if present.
- Remove the 1/2" NPT male pipe nipples at the rear of the light source, if present.
- After adding Teflon tape per instructions, install the female QD connector into port marked **Supply** on the laser rack.
- After adding Teflon tape per instructions, install the male QD connector into the port marked **Return** on the laser rack.
- After installing the quick disconnects onto the external light source, choose how to install the hoses:
 - Without 90° elbow on the hose—assembly option 1 (on page 3)
 - With 90° elbow on the hose—assembly option 2 (on page 7)

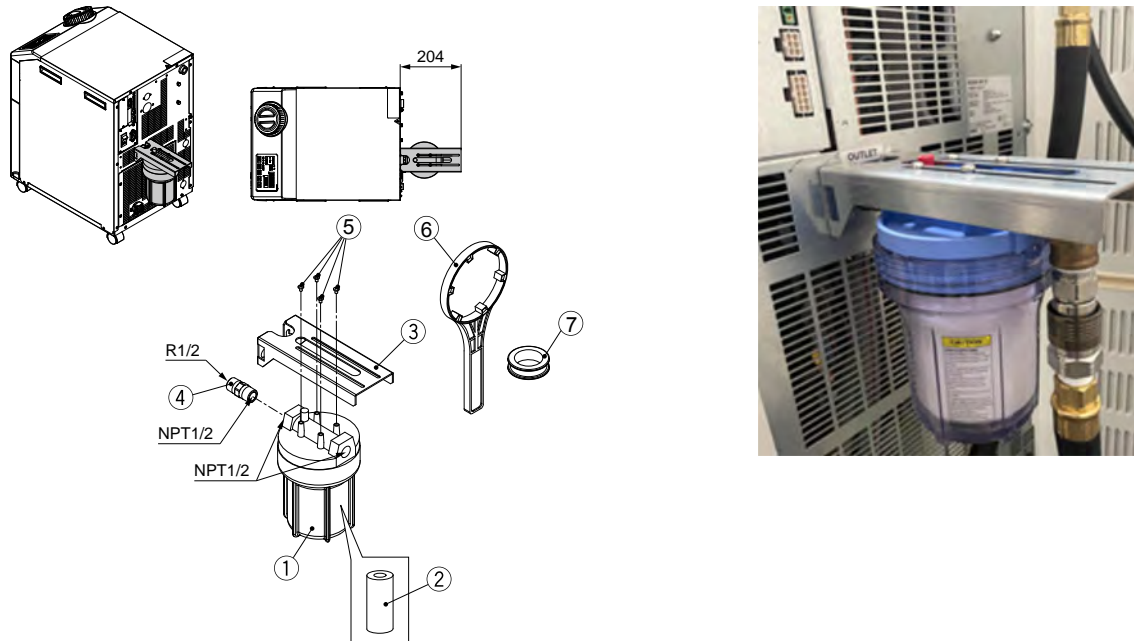
Assembly option 1: Configuring hoses (with 90° on the chiller)

With assembly option 1, the hoses point straight down with 90° on the chiller.

To enable the hoses to point in other directions, follow the steps for *assembly option 2* (on page 7).

Assembling and installing the optional particulate filter onto the outlet of the chiller

Learn the steps for assembling and installing the optional particulate filter for the chiller outlet.



1. Locate the double-sided nipple (item 4) in the filter kit.
That nipple uses 1/2" PT threads on one side and 1/2" NPT threads on the other side.
2. Make sure you have the outlet and inlet side of the filter oriented in the direction of the water flow: the NPT thread goes into the filter and the PT thread goes into the chiller.
Do not reverse the direction of the coolant flow or the nipple.
3. With the Teflon tape wrapped on the NPT thread, install the nipple into the *in* side of the filter.
4. With Teflon tape wrapped around the PT thread of the nipple, carefully thread the nipple into the outlet port on the chiller and tighten the filter until it is snugly rotated and with the top of the filter assembly at the top.
5. Install the 90° elbow and male QD connector on the output port.
6. Loosen the two screws located next to the outlet port but do not completely remove the screws.
7. Install the bracket and tighten the screws with a long #2 Philips screwdriver or small 8 mm wrench on the sides of the bracket.
8. Install the four screws to secure the filter to the bracket.

Connecting to the outlet with no particulate filter

Learn the steps for connecting to the outlet with no particulate filter.

1. Install the Teflon tape per instructions and thread each stainless male PT to female NPT into the rear of the outlet side of the chiller.
These adapters are supplied with the chiller.

2. After adding Teflon tape per instructions thread each 90° elbow into each stainless connector. Tighten until it is pointing straight down.
3. After adding Teflon tape per instructions, install the male QD connector into the port marked **Outlet** on the rear of the chiller.

Installing the fittings into the return side of the chiller

Learn the steps for installing the fitting into the return side of the chiller.

1. Install the Teflon tape per instructions and thread each stainless male PT to female NPT into the rear of the return side of the chiller.
These adapters are supplied with the chiller but only one is used if you have a particulate filter.
2. After adding Teflon tape per instructions thread each 90° elbow into each stainless connector. Tighten until it is pointing straight down.
3. After adding Teflon tape per instructions, install the female QD connector into the port marked **Return** on the rear of the chiller.

Assembling the hose assembly (if prefabricated hose is not supplied)

Learn the steps for putting together the hose assembly.

1. Install a ½" female NPT to ¾" hose barb firmly into the ¾" ID hose, which is opaque and rated for operation of greater than 100PSI (greater than 300PSI burst pressure).
2. Install the supplied clamps with inner sleeve and tighten.

Assembling the dripless quick disconnect connectors onto the hose assemblies

Each laser rack and chiller assembly require two hoses as part of the kit.

These hoses are typically identical in length to each other and are fitted with a male QD connector on one end and a female QD connector on the other end. Hoses should be either ordered at the ideal length or cut to the correct length to avoid excess coiling and routed in a way to avoid pinching the hose. The longer the hose, the more volume of coolant mix the system takes.

1. After adding Teflon tape per instructions, install a male QD connector into the ½" female NPT thread, installed on a ¾" ID hose barb/hose.
2. After adding Teflon tape per instructions, install a female QD connector into the other end of the hose ½" NPT thread on that hose.
3. For the second hose, repeat steps 1 and 2.

Attaching the hoses to the chiller and light source

Learn how to attach the hoses to the chiller and light source.

1. Bring both hoses to either the chiller or the light source.
Make sure you have one of each type at each end (meaning one male, one female QD connector at the chiller and one male and female connector at the laser light source).

Rear of chiller



Rear of laser rack



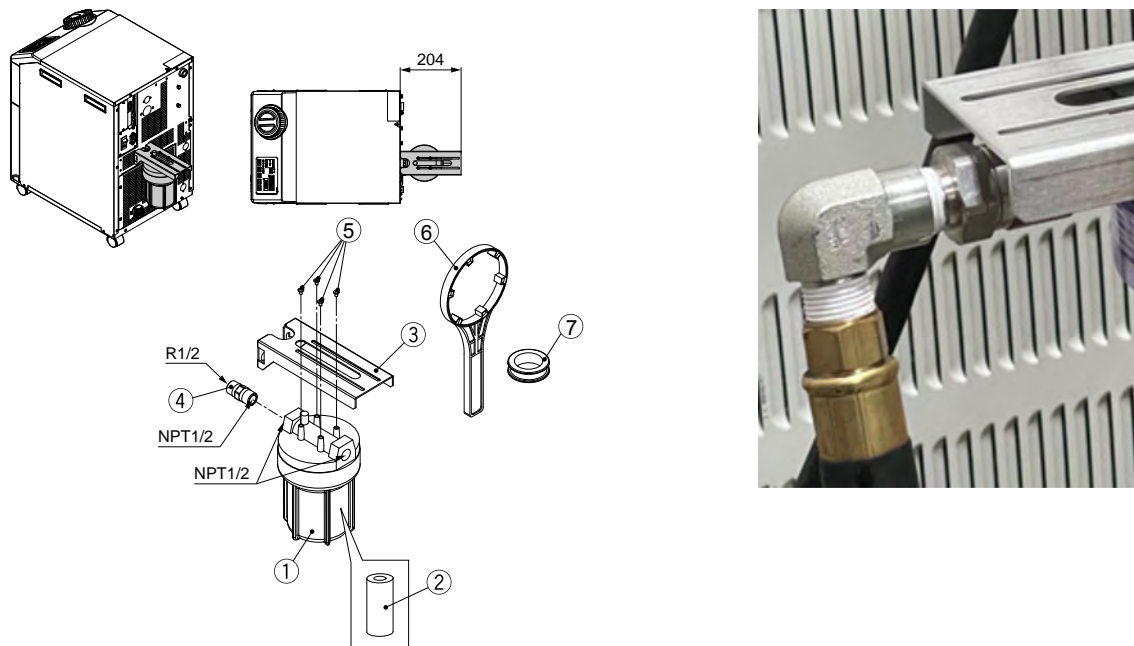
2. Connect each QD connector to the appropriate mating connector on each end of the hose. Follow the first time start up instructions in the "Performing initial system start-up" topic in the *Mirage SST user guide (P/N: 020-102956-XX)*.

Assembly option 2: Configuring hoses (with 90° elbow on the hose)

With assembly option 2, choose to have the hose point in another direction but straight down. Or if the NPT threads are leaking when the elbow is pointing down, install the elbow on the hose to allow the QD connectors to function like a swivel, enabling the hoses to be pointing in other directions.

Assembling and installing the optional particulate filter onto the outlet of the chiller

Learn the steps for assembling and installing the optional particulate filter for the chiller outlet.



1. Locate the double-sided nipple (item 4) in the filter kit.
That nipple uses 1/2" PT threads on one side and 1/2" NPT threads on the other side.
2. Make sure you have the outlet and inlet side of the filter oriented in the direction of the water flow: the NPT thread goes into the filter and the PT thread goes into the chiller.
Do not reverse the direction of the coolant flow or the nipple.
3. With the Teflon tape wrapped on the NPT thread, install the nipple into the *in* side of the filter.
4. With Teflon tape wrapped around the PT thread of the nipple, carefully thread the male QD connector directly into the rear of the water filter.
5. Loosen the two screws located next to the outlet port but do not completely remove the screws.
6. Install the bracket and tighten the screws with a long #2 Philips screwdriver or small 8 mm wrench on the sides of the bracket.
7. Install the four screws to secure the filter to the bracket.

Connecting to the outlet with no particulate filter

Learn the steps for connecting to the outlet with no particulate filter.

1. Locate the double-sided nipple (item 4) in the filter kit.
That nipple uses ½" PT threads on one side and ½" NPT threads on the other side.
2. Make sure you have the outlet and inlet side of the filter oriented in the direction of the water flow: the NPT thread goes into the filter and the PT thread goes into the chiller.
Do not reverse the direction of the coolant flow or the nipple.
3. With the Teflon tape wrapped on the NPT thread, install the nipple into the *in* side of the filter.
4. Install the Teflon tape per instructions and thread each stainless male PT to female NPT into the rear of the outlet side of the chiller.
These adapters are supplied with the chiller.
5. After adding Teflon tape per instructions, thread each the male QD connector into the port marked **Outlet** on the rear of the chiller.

Installing the fittings into the return side of the chiller

Learn the steps for installing the fitting into the return side of the chiller.

1. Install the Teflon tape per instructions and thread each stainless male PT to female NPT into the rear of the return side of the chiller.
These adapters are supplied with the chiller but only one is used if you have a particulate filter.
2. After adding Teflon tape per instructions, thread the female QD connector into the port marked **Return** on the rear of the chiller.

Assembling the hose assembly (if prefabricated hose is not supplied)

Learn the steps for putting together the hose assembly.

1. Install a ½" female NPT to ¾" hose barb firmly into the ¾" ID hose, which is opaque and rated for operation of greater than 100PSI (greater than 300PSI burst pressure).
2. Install the supplied clamps with inner sleeve and tighten.

Assembling the dripless quick disconnect connectors onto the hose assemblies

Each laser rack and chiller assembly require two hoses as part of the kit.

These hoses are typically identical in length to each other and are fitted with a male QD connector on one end and a female QD connector on the other end. 90° elbows must be installed for the ends of the hose connecting to the chiller. Optionally, 90° elbows can be installed on the hose at the laser rack end. Hoses should be either ordered at the ideal length or cut to the correct length to avoid excess coiling and routed in a way to avoid pinching the hose. The longer the hose, the more volume of coolant mix the system takes.

1. After adding Teflon tape per instructions, install a 90° elbow on each end of hoses that connects to the chiller.
 - a) Install a male QD connector into the ½" female NPT thread, installed on a ¾" ID hose barb/hose.
 - b) Install a female QD connector into the other end of the hose barb ½" NPT thread on that hose.
2. On the hose with an elbow and a male QD connector for the chiller, after adding Teflon tape per instructions, install a female QD connector into the other end of the hose with a ½" NPT thread on that hose.

Alternately, an 90° elbow can be installed on the laser rack end before the female QD is installed.

Attaching the hoses to the chiller and light source

Learn how to attach the hoses to the chiller and light source.

1. Bring both hoses to either the chiller or the light source.

Make sure you have one of each type at each end (meaning one male, one female QD connector with 90° elbows on the hose at the chiller and one male and female connector with or without 90° elbows at the laser rack end).



On the laser rack, the hoses can point down or to the side. To avoid interference with the output coupler, Christie does not recommend having the hoses pointed up.

Rear of chiller

Without filter installed:



With filter installed:

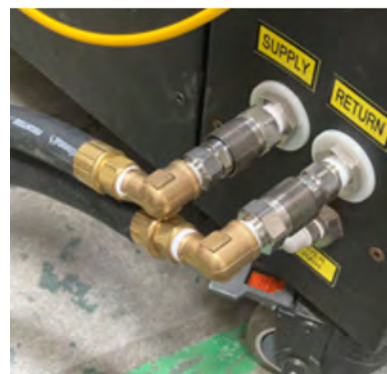


Rear of laser rack

Hoses pointed down:



Hoses pointed to the side:



2. Connect each QD connector to the appropriate mating connector on each end of the hose.

Follow the first time start up instructions in the "Performing initial system start-up" topic in the *Mirage SST user guide (P/N: 020-102956-XX)*.

Draining a system with the Christie-supplied dripless quick disconnect connectors

As the quick disconnect connectors are dripless, the hoses need to be disconnected to drain the system.

1. Disconnect the hoses.
2. Unthread the dripless connectors.
Or use spare male and female quick disconnect connectors in each end of the male and female sockets in the circuit.
3. If the system is on level ground, Christie recommends removing the hoses from the chiller and drain the system into an appropriate drain or catch basin.
This drains the hoses and the laser rack in the process. The chiller has a drain spigot at the bottom of the chiller.

Maintaining the chiller

For detailed information on maintaining the chiller equipment, refer to the product documentation provided by the chiller manufacturer.

After a system has been topped up using the Chiller Refill Calculator (Propylene Glycol mix approximately 20%), only top it up using only distilled water each time going forward. **Do not continue to add more approved glycol mix between coolant changes.** Never use drinking water.

To identify any leaks or problems, perform regular visual inspections of the chiller equipment and connections to the laser module.

Follow the recommended coolant replacement and preventative maintenance schedules. For more information, see the Preventative Maintenance Schedules provided by the chiller manufacturer.



Dispose of coolant in accordance with local regulations.

Technical support

Technical support for Christie Enterprise 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 (support.apac@christiedigital.com):
 - Australia: +61 (0)7 3624 4888 or tech-Australia@christiedigital.com
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