Recirculating Chiller UC Series

User Manual

Variants covered: 5/10, 20/20, 20/40, 30/30, 30/40, 50/30, 50/40, 30/80

Original instructions

Read this manual before using the equipment

Retain this manual for future use

Document number: 1001

Published date: 11 Apr 2023

Document version: 1

Published on: 11 Apr 2023

Document ID: 1001 - 1

Purpose of manual

This manual enables safe and efficient use of the Recirculating Chiller - UC Series. This manual is part of the equipment and must be stored where it is accessible to operating personnel at all times.

The operating personnel must carefully read and understand this manual prior to beginning any work. The basic prerequisite for safe work is compliance with all safety instructions and operating instructions in this manual.

The local occupational safety regulations and general safety regulations for the area of application of the equipment also apply.

Copyright

Contact information

USA Lab
12400 Belden Ct.
Livonia, MI
48150

support@usalab.com

tech@usalab.com

(734) 855-4890

www.usalab.com

Contents

1 Safety information

This section provides an overview of all safety aspects for the protection of people as well as safe and uninterrupted operation. Other task-related safety instructions are included in the specific sections.

1.1 Safety notices

This manual uses the following safety notice formats. Safety notices are used at the start of sections or embedded in operating instructions.

Make sure you fully understand and comply with the notices in this manual.

DANGER

Risk of death!

Indicates a hazardous situation which, if not avoided, will almost certainly result in death or serious injury.

WARNING

Risk of serious injury or death!

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Risk of injury!

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Notice

Indicates an important situation which, if not avoided, may seriously impair operations.

Additional information relating to the current section.

1.2 Special safety instructions

To draw attention to special hazards, this manual uses the following symbols.

Symbol	Meaning
	Electrical hazards and electrical shock hazards
	General warning
	Fire hazard
	Explosive materials
	Hot surface
	Heavy objects or equipment
	Corrosive substance
	Automatic starting equipment
	Trip hazard
	Non user serviceable parts

1.3 Intended use

The Recirculating Chiller - UC Series are devices that are used to provide an external cooling system for laboratory and other related systems that require cooling during operation.

A Recirculating Chiller is used to keep temperature-sensitive system components at a constant temperature. This is done by removing excess heat using convection through an open-loop water-based flow system.

WARNING

Danger due to misuse!

Misuse of the device can result in hazardous situations.

- Only operate the device if it is in an undamaged and working condition.
- Never deviate from the prescribed maintenance intervals.
- Only use parts that are specified in the technical data and approved for this device.
- Never modify the device without consulting the manufacturer.
- Never allow untrained personnel to operate the device.
- Never operate the device in potentially explosive atmospheres.

1.4 General safety warnings

WARNING

Risk of serious injury or death!

Only use this equipment for its intended purpose.

Do not leave the equipment running unattended.

Do not wear loose clothing, jewelry, hair, or any other articles that can be trapped by moving parts.

Do not operate equipment if you are fatigued, emotionally stressed, or under the influence of drugs or alcohol.

WARNING

Risk of electrical shock!

All power sources must be turned off when the equipment is not being used.

Ensure you use the correct power source for the equipment. Refer to the electrical specifications for the equipment being used.

WARNING

Risk of injury from trips or falls!

There is a risk of tripping on cables or pipe connections.

Ensure that cables or pipework are routed safely and that they are not trapped or pinched during use.

WARNING

Risk of injury from lifting heavy objects!

Use proper lifting and transportation devices when moving equipment.

WARNING

Automatically moving mechanical parts

Take care when in the vicinity of equipment with moving mechanical parts that may start automatically and unexpectedly.

Read the manual!

You must read this manual before starting work and operating this equipment.

Where required, you must use appropriate PPE when using this equipment.

Wear ear protection!

You must wear ear protection.

Wear eye protection!

You must wear eye protection.

Wear safe footwear!

You must wear safe and sturdy footwear.

Wear gloves!

You must wear appropriate gloves or hand protection.

Wear safe and protective clothing!

You must wear appropriate safe clothing.

Before using the equipment, locate the nearest of these facilities and resources:

Fire extinguisher!

Before using this equipment, locate your nearest fire extinguisher and fire prevention resources.

First Aid!

Before operating this equipment, locate your nearest first aid station.

1.5 Safe operating area

A safe operating area around the equipment and work area should be maintained at all times. Non-operators and other persons should not approach the equipment or work area.

USA Lab recommends a safe area of at least 12-16" (300-400 mm) around the equipment.

Caution

Risk of damage to the equipment!

Do not obstruct the ventilation on the side of the equipment. This can cause poor performance or part failure. Always keep the operating area clean and organized to prevent injury or damage.

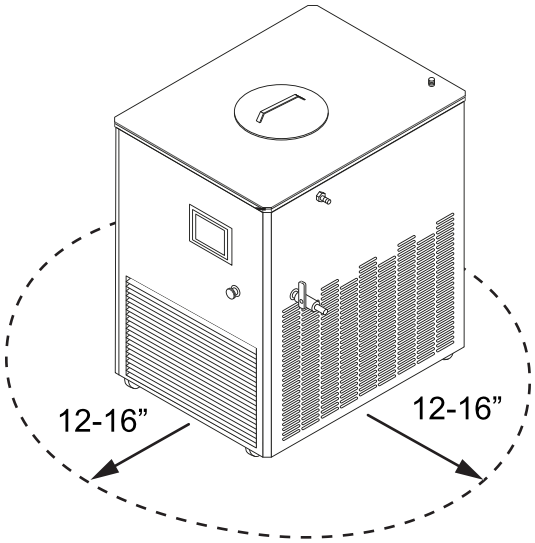


Figure 1 - Safe operating area around the chiller unit

1.6 Safety warnings

The following warnings and notices are safety information specific to the Recirculating Chiller - UC Series.

WARNING

Risk of serious injury or damage!

Only use approved thermal transfer fluids stated in this manual.

► For more information, see *Thermal transfer fluids* on page 17.

WARNING

Risk of serious injury or damage!

Follow all federal, state, municipal laws, codes, and ordinances when installing and operating the chiller.

WARNING

Risk of electrical shock!

Make sure the input voltage matches the specifications of the equipment.

Use the correct voltage, connection, and ensure proper grounding.

Do not unplug the chiller while it is in operation.

Do not use a generator to power the chiller.

Do not alter or change the length of the power cable.

WARNING

Risk of serious injury or damage!

Do not operate the fluid pump with your valve in the off position. The equipment will overheat the pump and lead to failure.

Do not run the liquid pump dry and allow plenty of time to prime the pump.

Do not allow the compressor to cycle more than 5 times per day.

The compressor has a 10 minute cool-down period before it can be run again.

Fluid lines must not have any hard bends which can prevent clear flow of fluids.

WARNING

Risk of serious injury or damage!

Do not use flammable, corrosive, or explosive substances on or near the equipment.

Only install the chiller in a climate-controlled environment.

Not to be serviced by users!

All repairs must be done following advice and information from USA Lab or one of their representatives.

Any repairs must only be done by qualified electricians.

Contact USA Lab for details if your equipment needs repair.

1.7 Responsibility of the owner

The owner is the person who operates the equipment for commercial or business purposes or allows a third party to use the equipment and bears legal responsibility for the product during operation for the protection of the user, personnel or third party.

1.7.1 Owner responsibilities

The equipment is used for commercial purposes. The owner of the equipment is therefore subject to the legal responsibilities for occupational safety.

In addition to the safety instructions in this manual, the applicable safety regulations as well as occupational safety and environmental regulations must be implemented for the area of application of the equipment.

This applies to the following:

- The owner must be informed of the applicable occupational safety regulations and conduct a risk assessment to identify any additional risks that may arise due to the special working conditions at the equipment location.
- This information must be implemented in the form of operating instructions for the operation of the equipment .
- During the entire period of equipment use, the owner must ensure that the operating instructions created reflect the current state of policy and adjust them if necessary.
- The owner must clearly regulate and define the responsibilities for operation, troubleshooting, maintenance and cleaning.

- The owner must ensure that all persons who work with the equipment have read and understood this manual.
- The owner must also train and inform personnel of hazards at regular intervals.
- The owner must provide personnel with the required protective equipment and must ensure that personnel wear the required protective equipment.
- The owner must ensure adequate ventilation of the installation site around the equipment and work area.
- The owner is also responsible for ensuring that the equipment is always in good working order. The following therefore applies:
    - The owner must ensure that the maintenance intervals described in this manual are observed.
    - The owner must ensure that the required fire protection measures are always compliant and functional.

2 Hardware description

Before operating the equipment, you should be familiar with the location and names of all parts of the equipment. This will help you understand the operating procedures and assist with troubleshooting, if required.

2.1 Overview

The Recirculating Chiller - UC Series are high-performance open-loop recirculating chillers that use phase change compressors to pump and transfer cooling fluid quickly around your system.

The chillers are connected to your system using flexible inlet and outlet hoses that are insulated to maintain temperature variations.

The chillers are controlled and configured using an LCD or touch-screen PLC interface. This interface provides access to fluid pumping controls and temperature setting.

The variants covered in this manual are:

5/10, 20/20, 20/40, 30/30, 30/40, 50/30, 50/40, 30/80

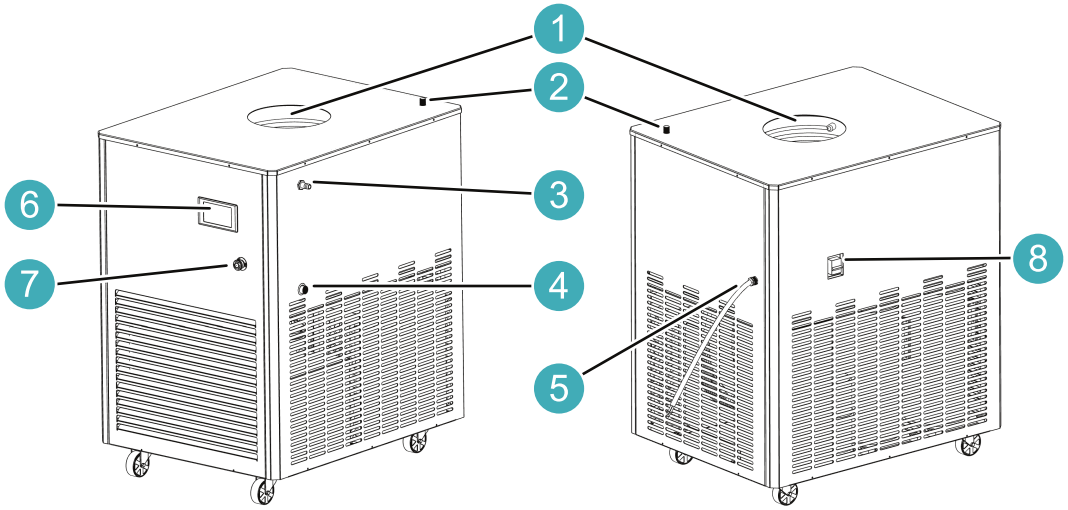
The UC Series numbering is as follows:

UC-XX/YY = Liter capacity / Lowest rated set point

Thermal fluid is poured into the main tank and then, after priming the chiller and your system, the fluid is chilled and pumped around your system, for example a rotary evaporator.

All chiller variants are fitted with casters to allow easy positioning relative to your system.

2.2 Chiller parts



1	Main chiller fluid reservoir. Includes a cover lid (not shown).
2	Stand attachment. Used for supporting other equipment.
3	Cooling fluid inlet port. Warm fluid.
4	Cooling fluid outlet port. Cooled fluid.
5	Main power cable input connection.
6	Display and controls.
7	Emergency stop button (not available on all models).
8	Main power ON/OFF breaker switch.

Figure 2 - Front view of the chiller

2.2.1 Tubing connections

Insulated tubing is provided with your chiller. The tubing needs to be cut to the required size. Contact USA Lab if you require more tubing.

Tubing should be unobstructed without any hard bends in the run.

The tubing is connected to the inlet and outlet ports of the chiller.

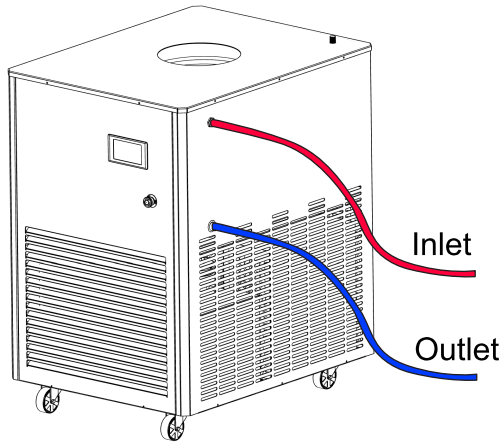


Figure 3 - Tubing connections

2.2.2 Electrical connections

Each chiller has its own power requirements. Make sure you are aware of the requirements for your chiller variant.

► For more information, see *Specifications* on page 37.

The chiller must operate on its own circuit Installed by a qualified electrician.

Depending on the chiller variant, different plug types maybe fitted to your chiller.

The following is a list of the plug types used with each variant:

- UC 5/10: NEMA 5-20P
- UC 20/20: NEMA 6-20P
- UC 20/40: NEMA 6-20P
- UC 30/30: NEMA L6-30P
- UC 30/40: NEMA L6-30P
- UC 30/80: NEMA L6-30P
- UC 50/30: NEMA L6-30P
- UC 50/40: NEMA L6-30P

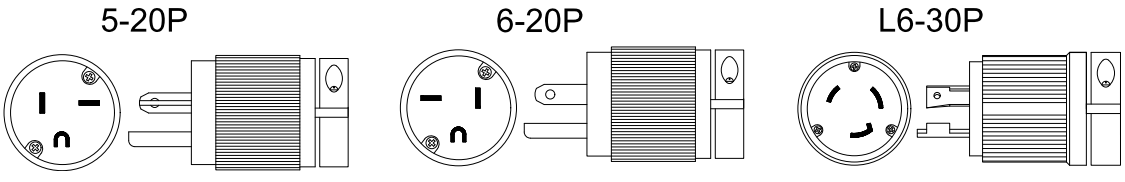


Figure 4 - Plug types used on chillers

2.3 E-stop - UC 30/80

The emergency stop button on the UC 30/80 chiller is located on the front of the unit.

Figure 5 - Emergency stop button

You may need to prime your chiller and system if the emergency stop was activated because of a leak in the cooling system which may have allowed air into your system.

2.4 Chiller identification

The chiller identification label is located on the rear of the unit.

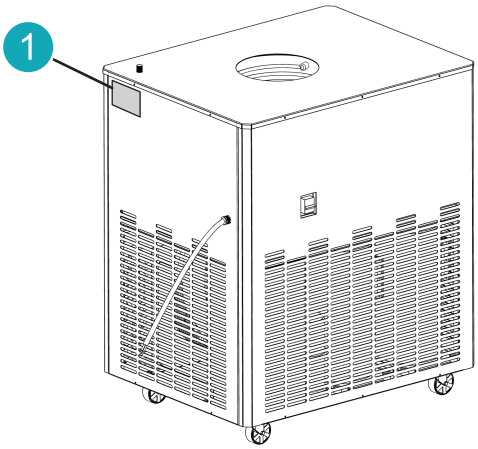


Figure 6 - Chiller nameplate location (1)

The chiller identification label provides the following information:

- Unit name
- Unit model
- Refrigeration power (W)
- Voltage / Frequency (V/Hz)

- Current (A)
- Power (W)
- Weight
- Batch number
- Manufacturing date

The location of the identification label varies between the chiller models.

2.5 Thermal transfer fluids

WARNING

Risk of serious injury or damaged!

Do not use automotive anti-freeze, it contains additives that have been known to corrode heat exchangers.

Do not use tap water, as it can cause corrosion of internal parts.

USA Lab recommends using a blend of Propylene Glycol (PG) and Distilled Water (DW) for the cooling fluid used the chiller tank.

Table 1 - Blends by volume %

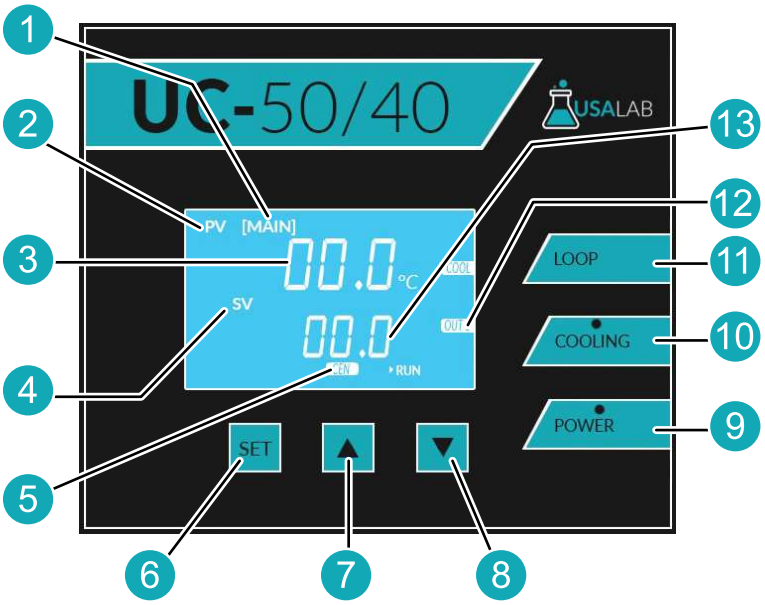
Lowest Degree C	-10°C	-20°C	-30°C	-40°C
PG : DW	30 : 70	40 : 60	50 : 50	60 : 40

The following cooling fluids are recommended by USA Lab for the chiller variants listed:

- PG 30:70 Distilled Water: 5/10
- PG 40:60 Distilled Water: 20/20
- PG 50:50 Distilled Water: 30/30, 50/30
- PG 60:40 Distilled Water: 20/40, 30/40, 50/40

2.6 Control panel - LCD display

The LCD control panel is located on the front of the chiller.



1	Programming level
2	Point value (PV) (current temperature)
3	PV display
4	Set value (temperature setting)
5	Cooling enabled (flashing - standby)
6	Modify SV button
7	SV value increase button
8	SV value decrease button
9	Power button
10	Cooling start and stop button
11	Fluid pump button
12	Fluid pump enabled
13	SV display

Figure 7 - LCD display

2.7 Control panel - PLC display

The PLC display is only used on the UC 30/80 model. The display is located on the front of the chiller. The PLC display provides more control over the temperature settings and lets you program cycles of temperature levels.

Notice

To access the User Set and System Set menus, you need to enter a password.

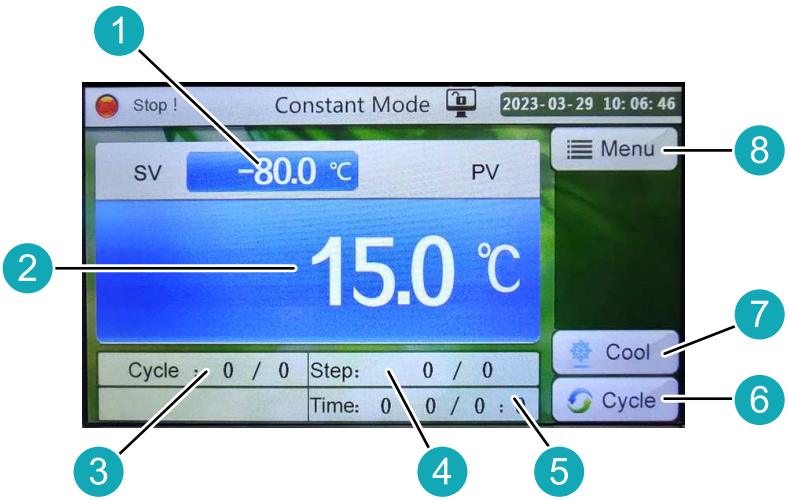
- User Set password: 3
- System Set password: 9

2.7.1 Main display

1	Used to access the monitor display. This display shows you the current cooling temperature and, if selected, the current programmed step of a temperature cycle.
2	Used to access user-configurable temperature settings. These settings are password protected.
3	Used to access and select which mode of operation you wish to use. • Constant • Program
4	Used to access the system settings. These settings are password protected.

Figure 8 - Main display

2.7.2 Monitor display



1	The current temperature setting value.
2	The current measured temperature value.
3	The operating cycle shown as current cycle / total set cycles.
4	The running steps shown as current step / total configured steps.
5	The current running time and the current set time for the current cycle.
6	Select to start the cycle function. Select the button again to stop the cycle function.
7	Select to start the cool function. Select the button again to stop the cooling function.
8	Select to access the main menu.

Figure 9 - Monitor display

Depending on the ***Mode Set*** option selected from the main menu, selecting SV (1) displays either the ***Constant*** or ***Program*** mode temperature settings.

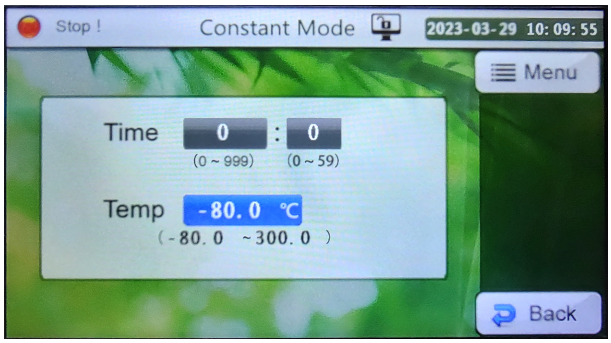


Figure 10 - Constant mode temperature settings

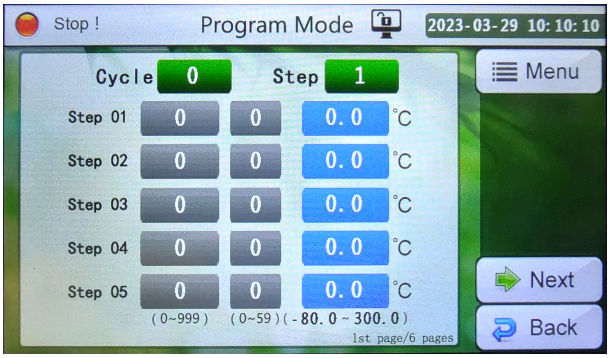


Figure 11 - Program mode temperature settings

This page is intentionally left blank

3 Installation and set up

Before you start using your Recirculating Chiller, make sure all parts are in place and the system is ready.

3.1 What's in the box

The following parts are included in the package:

Table 2 - Packaging list

Part	Amount
Chiller	1 unit
Insulated tubing	12 ft
Barbed fitting	1 piece
MNPT union	1 piece
Ball valve	1 piece
PTFE sealing tape	1 piece
Manual	1 piece

3.2 Unpacking and positioning the chiller

Unpack the chiller and confirm you have all necessary items before setting up the unit.

Notice

If you believe any parts are missing, contact USA Lab. Keep the original packaging in case you need to return or send the unit back for repairs. USA Lab is not responsible for providing the packaging material.

1. Position the unit within 6 ft of the system to which you want to connect.

   Place the chiller in a way that guarantees proper ventilation.

   ► For more information, see *Safe operating area* on page 9.

2. Cut the supplied insulated tubing for the inlet and outlet ports to the appropriate length.

> **Notice**
>
> Use the PTFE tape and wrap at least 4 times around the thread of the outlet port.

3. Attach the outlet ball valve to the outlet port.

> **Notice**
>
> Use the PTFE tape and wrap at least 4 times around the thread of the outlet port.

4. Attach the 5/8" Barb fitting to the inlet port.
5. Connect the unit to the power supply that matches the specifications of your model.

3.3 Priming the chiller

Priming the pump of your chiller is an important step to make sure there is no air in the pump that could prevent the unit from functioning properly.

Prime the pump in the following scenarios:

- On first use
- After the reservoir is emptied, and then filled
- If you notice any bubbling
- If the liquid flow is visibly impeded

To prime the pump, follow these steps:

1. Make sure the outlet port valve is closed.
2. Open the lid.
3. Fill the reservoir with the coolant.

> **Notice**
>
> When filling the reservoir, note the inside position of the inlet port. The coolant in the reservoir should not be higher than 2” below the inlet port.

4. Close the lid.

5. With the supplied insulated tubing, create a looped circuit by connecting one end to the outlet port, and the other to the inlet port.

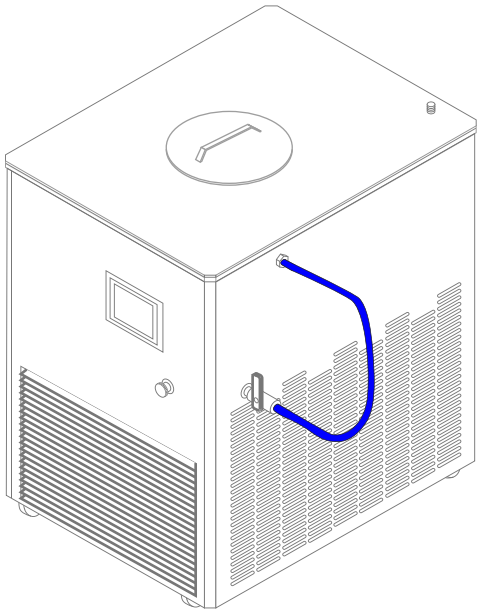


Figure 12 - Looped tubing - inlet to outlet

6. Open the outlet port valve.
7. Flick the power breaker switch on, and then turn on the unit display:
   - On the 30/80 model, make sure the E-stop button is released.
   - On other models displays, select ***POWER***.
8. Initiate priming by running the internal pump:
   - On the 30/80 model display, select ***Cycle***.
   - On other models displays, select ***LOOP***.
9. Wait five minutes for pump priming to complete.

> A strong flow and no air bubbles in the tubing are good indicators of a well-primed pump.

10. Stop the internal pump:
    - On the 30/80 model display, select ***Cycle***.
    - On other models displays, select ***LOOP***.
11. Close the outlet port valve.

The chiller is now primed.

3.4 Priming the system

After priming the pump, you can connect the chiller to the system that you want to cool. When you connect the chiller to other equipment, you need to prime the whole connected system to guarantee efficient operation.

To prime the system, follow these steps:

1. Make sure the outlet port valve is closed.
2. With two cut pieces of the supplied insulated tubing, connect the chiller to the equipment:
   a. Connect one tubing piece to the chiller outlet port and the respective port of the desired equipment.
   b. Connect the other tubing piece to the chiller inlet port and the respective port of the desired equipment.
3. Open the outlet port valve.
4. Flick the power breaker switch on, and then turn on the unit display:
   - On the 30/80 model, make sure the E-stop button is released.
   - On other models displays, select ***POWER***.
5. Run the internal pump:
   - On the 30/80 model display, select ***Cycle***.
   - On other models displays, select ***LOOP***.
6. Open the lid.
7. As the chiller distributes the coolant from the pump priming throughout your system, note how the fluid level changes and add more coolant if required.

> **Notice**
>
> When filling the reservoir, note the inside position of the inlet port. The coolant in the reservoir should not be higher than 2” below the inlet port.
>
> When priming the system, the coolant level should not drop below the quarter of the reservoir.

8. Wait five minutes for system priming to complete.

> A strong flow and no air bubbles in the tubing across the whole system are good indicators of a well-primed system.

9. Close the lid.

10. Stop the internal pump:
    - On the 30/80 model display, select ***Cycle***.
    - On other models displays, select ***LOOP***.
11. Close the outlet port valve.

Your chiller is now ready to use.

This page is intentionally left blank

4 Operations

This section describes common tasks required for the operation of the Recirculating Chiller.

4.1 Running the chiller

With the system and chiller pump primed, you can start the chiller to control the temperature in your system.

> **Notice**
>
> Remember to use the unit in a climate-controlled facility, with a recommended room temperature of 70°F (21°C). The performance of the chiller degrades if the room temperature exceeds 80°F (26°C).

To run the chiller, follow these steps:

1. Flick the power breaker switch on, and then turn on the unit display:
   - On the 30/80 model, make sure the E-stop button is released.
   - On other models displays, select ***POWER***.
2. Open the outlet port valve.
3. Run the internal pump:
   - On the 30/80 model display, select ***Cycle***.
   - On other models displays, select ***LOOP***.
4. Set the desired temperature and initiate cooling:

Model	Actions
30/80	1. On the display, select ***SV*** and choose the desired temperature setting. 2. Select ***Cool***.
Other models	1. On the display, select ***SET***. 2. Use the up and down buttons to set your temperature. 3. Select ***SET*** again to lock your temperature. 4. Select ***COOLING***.

> **Notice**
>
> There is a 5-10 minute standby delay before the compressor activates. After the compressor activates, the system cooling starts.

Caution

Do not run the chiller for more than 16 hours. Any longer periods of continuous operation negatively impact the compressor lifecycle.

Your chiller is now running and adjusting the temperature of your system to the set temperature.

4.2 Shutting down the chiller

After you finish your work, the chiller must be shut down.

To shut down the chiller, follow these steps:

1. Stop the cooling:
   - On the 30/80 model display, select ***Cool***.
   - On other models displays, select ***COOLING***.
2. Stop the internal pump:
   - On the 30/80 model display, select ***Cycle***.
   - On other models displays, select ***LOOP***.
3. Shut down the chiller:
   a. If you are using a model other than 30/80, on the unit display, select ***POWER***.
   b. On the side of the unit, flick the power breaker switch off.
4. Close the outlet port valve.

5 Service and maintenance

When using a Recirculating Chiller, make sure to service your unit correctly and perform the necessary checks at the required intervals.

WARNING

Risk of serious injury or death!

Shut off the power switch and disconnect the power cord from the unit before performing any maintenance tasks.

Maintenance of internal electrical and heating parts must be performed by professionals or trained electricians.

Cleaning tips:

- Use a damp and soft cloth for wiping.
- Use neutral detergents to deal with stubborn stains.
- Do not splash water directly over the equipment.
- Do not use abrasive powder, diluent, oil, kerosene, acidic material, or similar substances when cleaning.

Notice

When using the recommended propylene glycol in thermal transfer fluids, remember that glycol degrades over time. Purchase glycol test strips and test the substance monthly.

5.1 Regular checks

USA Lab recommends the following checks to make sure your equipment runs smoothly:

Table 3 - Regular checks for the Recirculating Chiller - UC Series.

Check	Every day	Every 3 months
Check the fluid levels.	Yes	
Check for cracks and potential leaks.	Yes	
Check for any damaged electrical lines.	Yes	
Check the coils for damage and wear.		Yes
Change the cooling fluids and check fluids for debris.		Yes
If required, change the taping on the piping joints.		Yes
Blow out the condenser section with compressed air and clean the condenser. In high-dust environments, perform this check every month instead.		Yes

5.2 Long-term storage

If you plan to not use your chiller for a longer period of time, take the following actions to prepare the unit for storage:

- Empty the unit of any fluids.
- Cap the inlet and outlet.
- Clean the condenser.
- Clean the body of the unit.
- Wrap the unit with plastic.
- Store the unit in a secure and level location.
- Store in a dry climate.
- Do not store outside.

6 Troubleshooting

If you encounter issues with your unit, refer to the following table or contact tech@usalab.com at USA Lab.

► For more information, see *Contact information* on page 2.

Table 4 - Troubleshooting for the Recirculating Chiller - UC Series.

Problem	Possible cause	Solution
No power	1. The chiller is not plugged in. 2. There is no power from the outlet. 3. There is power in the outlet, but not in the chiller.	1. Plug in the chiller. 2. Reset the breaker or GFCI. Call an electrician. 3. Unplug the chiller, open the rear panel, and check for damage.
Incorrect temperature display	1. The probe wire is loose. 2. The temperature probe has a short circuit. 3. The display board has failed.	1. Repair the loose wire. 2. Replace the temperature probe. 3. Replace the display board.
Temperature display not working correctly or flashing	1. Incorrect supply voltage. 2. The power board has failed.	1. Verify the power supply matches the requirements. 2. Replace the power board.

Problem	Possible cause	Solution
Shock from the unit shell	1. Faulty system grounding.	1. Repair the fault in system grounding.
No cooling	1. Cooling is not enabled. 2. The condenser fan is not spinning. 3. The compressor does not start. 4. The refrigerant has leaked.	1. On the display, press the cooling button. 2. Replace the condenser fan. 3. Check the capacitors, relay, and power board. 4. Call an HVAC technician to repair and recharge the system.
Cooling slowly or warming	1. The compressor has stopped. 2. The condenser fan is not spinning. 3. The glycol ratio is incorrect. 4. The capillary or refrigerant are blocked. 5. The liquid pump is running slowly. 6. The load is greater than the chiller can handle. 7. The tubing lines are not insulated.	1. Wait 5 to 10 minutes for the compressor delay to end. 2. Replace the condenser fan. 3. Do not use more than 60 % glycol in your blend. 4. Call an HVAC technician to repair and recharge the system. 5. Re-prime the liquid circulation pump or remove the restriction. 6. Reduce the heat load on the chiller. 7. Use the supplied line insulation to prevent thermal loss.

7 Decommissioning, disassembly and disposal

After the service life of the equipment is reached, the equipment must be disposed of in an environmentally appropriate manner.

WARNING

Risk of serious injury or death!

All electronics and batteries, if fitted, must be recycled according to local regulations.

All metal components can be recycled according to local regulations.

All fluids must be fully drained and disposed of according to local regulations.

This page is intentionally left blank

8 Specifications

This chapter details the specifications of the Recirculating Chiller.

8.1 UC 5/10 specifications

Table 5 - UC 5/10 specifications

Reservoir capacity	5 L
Reservoir dimensions	8” x 8”
Temperature range	Ambient to -10°C
Power requirements	110-120 V / 50-60 Hz / 20 A Single Phase
Plug type	NEMA 5-20P
Compressor type	1HP Danfoss
Compressor capacity	4,387 BTU at 20°C 1,000 BTU at minimum °C
Pump model	UC110VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a 1/2” brass barbed valve
Refrigerant	R-404a
Overall dimensions	19” x 14” x 29”
Weight	100 lbs.

8.2 UC 20/20 specifications

Table 6 - UC 20/20 specifications

Reservoir capacity	20 L
Reservoir dimensions	11.8” x 11.8”
Temperature range	Ambient to -20°C
Power requirements	220-240 V / 50-60 Hz / 20 A 1800 W Single Phase
Plug type	NEMA 6-20P
Compressor type	2HP Gree
Compressor capacity	10,317 BTU at 20°C 3,000 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a male union, brass valve, and 1/2” MNPT to 1/2” Barb
Refrigerant	R-404a
Overall dimensions	24.8” x 20.4” x 43.3”
Weight	154 lbs.

8.3 UC 20/40 specifications

Table 7 - UC 20/40 specifications

Reservoir capacity	20 L
Reservoir dimensions	11.8” x 11.8”
Temperature range	Ambient to -40°C
Power requirements	220-240 V / 50-60 Hz / 20 A 1800 W Single Phase
Plug type	NEMA 6-20P
Compressor type	2.5HP K compressor
Compressor capacity	12,250 BTU at 20°C 3,300 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a male union, brass valve, and 1/2” MNPT to 1/2” Barb
Refrigerant	R-404a
Overall dimensions	24.8” x 20.4” x 43.3”
Weight	164 lbs.

8.4 UC 30/30 specifications

Table 8 - UC 30/30 specifications

Reservoir capacity	30 L
Reservoir dimensions	13.7” x 13.7”
Temperature range	Ambient to -30°C
Power requirements	220-240 V / 50-60 Hz / 30 A 2500 W Single Phase
Plug type	L6-30p
Compressor type	3HP Gree
Compressor capacity	13,313 BTU at 20°C 4,000 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a male union, brass valve, and 1/2” MNPT to 1/2” Barb
Refrigerant	R-404a
Overall dimensions	30.3” x 25.5” x 39.7”
Weight	180 lbs.

8.5 UC 30/40 specifications

Table 9 - UC 30/40 specifications

Reservoir capacity	30 L
Reservoir dimensions	13.7” x 13.7”
Temperature range	Ambient to -40°C
Power requirements	220-240 V / 50-60 Hz / 30 A 2500 W Single Phase
Plug type	L6-30p
Compressor type	3HP Tecumseh
Compressor capacity	13,742 BTU at 20°C 4,300 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a male union, brass valve, and 1/2” MNPT to 1/2” Barb
Refrigerant	R-404a
Overall dimensions	30.3” x 25.5” x 39.7”
Weight	180 lbs.

8.6 UC 30/80 specifications

Table 10 - UC 30/80 specifications

Reservoir capacity	30 L
Reservoir dimensions	13.7” x 13.7”
Temperature range	Ambient to -80°C
Power requirements	220-240 V / 50-60 Hz / 30 A 5250 W Single Phase
Plug type	L6-30p
Compressor type	2x 4HP Tecumseh
Compressor capacity	16,000 BTU at 20°C 1,450 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	1/2” FNPT with a male union, brass valve, and 1/2” MNPT to 1/2” Barb
Refrigerant	Stage 1: R-404a, Stage 2: R23
Overall dimensions	39” x 31.9” x 48.4”
Weight	473 lbs.

8.7 UC 50/30 specifications

Table 11 - UC 50/30 specifications

Reservoir capacity	50 L
Reservoir dimensions	17.7” x 13.7”
Temperature range	Ambient to -30°C
Power requirements	220-240 V / 50-60 Hz / 30 A 6000 W Single Phase
Plug type	L6-30p
Compressor type	5HP Invotech
Compressor capacity	37,617 BTU at 20°C 2,508 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	3/4” FNPT with a male union, brass valve, and 3/4” MNPT to 5/8” Barb
Refrigerant	R-404a
Overall dimensions	31” x 26” x 46”
Weight	174 lbs.

8.8 UC 50/40 specifications

Table 12 - UC 50/40 specifications

Reservoir capacity	50 L
Reservoir dimensions	17.7” x 13.7”
Temperature range	Ambient to -40°C
Power requirements	220-240 V / 50-60 Hz / 30 A 6000 W Single Phase
Plug type	L6-30p
Compressor type	5HP Invotech
Compressor capacity	37,617 BTU at 20°C 628 BTU at minimum °C
Pump model	UC220VRFP
Pump wattage	100 W
Pump flow rate (water)	30 L/min
Pump lift (water)	4 m / 12 ft
Pump pressure	2.2 bar
Port connection size	3/4” FNPT with a male union, brass valve, and 3/4” MNPT to 5/8” Barb
Refrigerant	R-404a
Overall dimensions	31” x 26” x 46”
Weight	174 lbs.

9 Spare parts

For a list of spare or replacement parts, contact USA Lab for details.

This page is intentionally left blank

10 Warranty

USA Lab products are warranted to be free of workmanship, mechanical, and material defects for one to three years from the date of purchase depending on product. Within this warranty period, USA Lab will replace or repair components that fail due to manufacturer defect.

Within continental United States repairs or parts, shipping charges will be covered in full or in part by USA Lab.

For all other locations, repairs or parts will be covered in full by USA Lab, and the customer will be responsible for shipping, labor, and custom duties.

This warranty does not cover any failures due to alteration, repairs, misuse, accident, or abuse. This warranty also does not cover wear items such as glassware, heating elements, thermocouples, oil seal sets, switches, and sensors.

The warranty does not cover wrongful input voltage. The customer needs to be responsible for monitoring power rating and routine checking.

If using water in a heater or chiller, the customer must only use distilled water. Other forms of water will void the warranty.

10.1 Returns policy

USA Lab offers a 30-day returns policy from when your package is delivered to your shipping address. By placing an order with USA Lab, you express that you have read and agreed to the following returns policies:

- USA Lab does not accept returns for customized items. When purchasing a customized item, you agree that there are no returns due to the nature of the item(s) being specific to your needs. USA Lab does not accept returns on any solvents or consumables.
- For pre-orders, there is a 10 % non-refundable fee associated with canceled pre-orders. This covers the banking fees and the hold fee.
- By default, a minimum of 15 % restocking fee is applied on all items that are in original packaging and unused with no damage. This applies to all items returned within 30 days, without exceptions. You are responsible for the return shipment unless deemed defective by USA Lab. In that case, USA Lab will pay for return shipment and replacement shipment costs.

- The item(s) must be returned in original packaging and in undamaged condition. The item(s) must have no signs of usage or wear including stickers, scratches, dents, resins, non-standard fluids, plant matter, or any other wear not representing a new, unused item.

  Unused and undamaged products not in original packaging will be subject to a restocking fee equal to 25 % of the purchase price.

  Products deemed defective with any signs of usage, wear, or damage, including, but not limited to, the presence of botanical material, resins, cleaning agents, stickers or decals, or any damage, wear, or tear, will not be accepted for return.

- After the returned item is received, tested, inspected, and processed, a refund will be issued. If your item(s) are in original packaging and unused, you will be refunded the initial purchase price with the 15 % restocking fee deducted.

  If your item(s) are deemed damaged or used, you will not be refunded.

- Contact support@usalab.com at USA Lab

  ► For more information, see *Contact information* on page 2.

Index