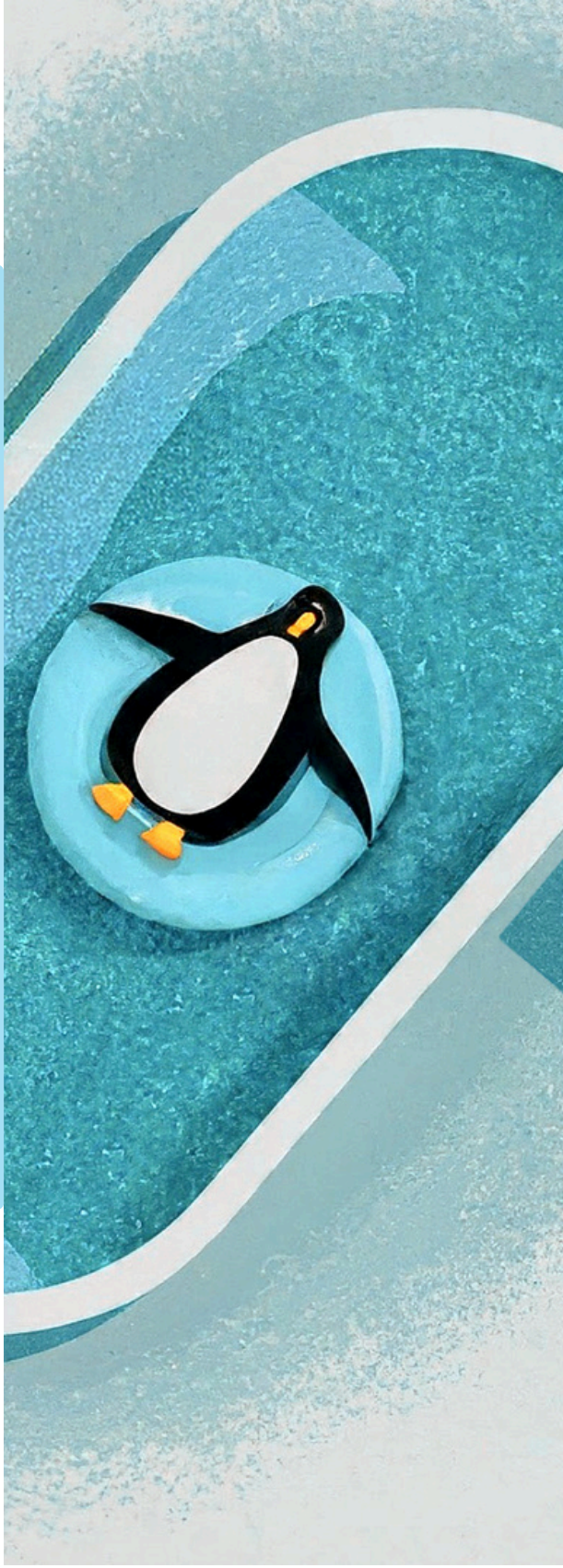
PENGUIN CHILLERS
WE. KNOW. COLD.

COLD THERAPY CHILLER



OWNER'S MANUAL

Visit Us At:
www.penguinchillers.com

Issued:
July 23, 2024

URGENT NOTICE

When first receiving the chiller AND anytime the chiller is moved without keeping the unit level, you MUST let the chiller remain upright for at least 2 hours before plugging it in.

Failure to do so will result in chiller damage.

R32

THE LOW GWP ALTERNATIVE TO R410A

R32 refrigerant has a 68% lower GWP (Global Warming Potential) than R410. While neither refrigerant deteriorates the Ozone layer like R22 did, there is a clear winner when looking at potential to contribute to global warming via greenhouse gases. R32 is a much more environmentally friendly alternative to R410 and we expect to see it become the new environmentally friendly standard in the years to come.

THE LOW GWP ALTERNATIVE TO R410A

R32 is technically classified as a "mildly flammable" gas by the EPA. However R32 is extremely difficult to ignite, non-explosive, and the least toxic of all the Class A refrigerants. The regulatory warning labels on Penguin Chillers are EPA mandated for all refrigerants considered flammable which covers a wide range of refrigerants including mildly flammable refrigerants like R32 as well as highly flammable gasses such as butane (R600) and propane (R290). When it comes to label requirements there is no distinction made between mildly flammable and highly flammable. These regulatory warnings can be a bit intimidating, they are there to keep you informed, but they should not lead you to worry about the use of our chillers in normal operation.

This information is based on reports prepared by the Air-conditioning and Refrigeration Equipment Manufacturers Association of Australia (AREMA) and the Consumer Electronics Supplier Association (CESA)

General Information

Chiller Ventilation

Chillers work on the principle of moving heat from one spot to another. In the case of a water chiller, its job is to move heat from the water out into the air. This means proper air flow is critical to the operation of a chiller. If the chiller is located in an overly hot or unventilated area, it cannot dissipate the heat efficiently, lowering the chiller's ability to cool. Unless properly modified, enclosed spaces like small cabinets or closets will heat up quickly and won't provide enough ventilation for the chiller to properly function. If the chiller's hot exhausted air is being recirculated back into its intake grills, the chillers BTU/hr capacity is greatly reduced. It is **recommended to have at least 12" of open space on all sides** of the chiller to allow for proper ventilation.

We do not recommend putting the chiller in an area that cannot get wet as the chiller, along with the tubing, will produce condensation and there is always a risk of water spillage.

Power

Our cold therapy water chiller has a GFI plug. It's suitable to plug into a 110v - 120v 15a outlet (standard household outlet) It is recommended to plug directly into a receptacle. Power strips should be avoided. If an extension cord is necessary we recommend using a 12 awg cord with single end (not a multi tap). Once plugged in, be sure the GFI is in the reset position.

Cost To Run

At $0.12/KWh the monthly cost of operation should be around $18-$28/month. The compressor and fan only turn on when cooling is needed, once the water reaches your set point they turn off and only the low wattage pump continues to run.

General Information Cont.

Connecting Your Chiller

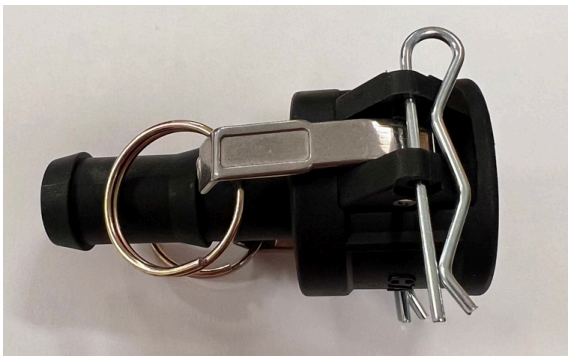
The chiller features two (2) female camlock fittings to connect with male camlock fittings on the back of the chiller.

The camlock fittings have 3/4″ barbs for connecting 3/4″ ID tubing to the chiller. (Tubing sold separately if not purchased in one of our packages).

Follow the Inlet/Outlet flow pattern as marked to ensure the chiller functions properly.

Take your tubing with the in-line filter and female camlock, put it over the male camlock fitting, and pull the levers towards you. Ensure the arrow on the in-line filter is pointing towards the "Inlet" of the chiller.

After you secure the camlock fitting in place, remove the metal pin from the metal ring and put it through the hole on the camlock fitting to ensure you have a secure connection. (Not In Video)



If you have purchased an accessory kit or if you have purchased a tub option, please refer to the additional setup guide for more information on how to connect your chiller.

Click Play Button For Video

General Information Cont.

Water Flow

The Cold Therapy Chiller has a built-in pump, so an external pump is not needed.

Your setup needs to gravity prime to the pump; the pump is not capable of self priming/suction. Place the chiller within 3′ of the drain of your tub. The bottom of the chiller should be at the same or lower height compared to the bottom of your tub – do not elevate the chiller above the tub. An overly long tubing run from the tub drain to the chiller inlet may cause the pump to fail to move enough water.

If you have a setup where gravity priming your pump is not an option, you will need to manually prime the line. You can do so by filling the tube going to the "inlet" of the chiller with water. Once the tube is completely full, take the palm of your hand and place it over the opening of the tube. You can then take the tubing and put it under water. At that point, you can release your hand, and your line is now primed. (Make sure to fill the tube all the way to avoid air getting in the line). See a video example of priming the pump here.

When you go to fill your tub with water, try keeping the water level just below where the water comes back into the tub. The pressure of the water over the opening makes the pump work harder to push the newly cooled water through.

IF YOU EVER NOTICE YOUR SYSTEM DOES NOT HAVE FLOW, OR IF YOU ARE QUESTIONING WHETHER THE FLOW YOU'RE SEEING IS NORMAL, IMMEDIATELY UNPLUG THE CHILLER & CONTACT SUPPORT@PENGUINCHILLERS.COM

Damage caused by slow flow throughout the system due to improper setup or maintenance will not be covered under the manufacturer warranty.

General Information Cont.

Filters

We recommend to **clean both filters on a weekly basis** and ensure they don't get too dirty. If you notice after a weeks time the filters are quite clogged, adjust your cleaning accordingly and clean more often. Although **in no circumstances do we recommend going longer then a week without cleaning both filters, even if the filters are not visually dirty.**

To clean the larger blue canister filter you will:

1) Unplug the chiller.

2) Unscrew the blue canister (filter wrench included to make removing it easier). The filter will pop off the cap.

3) Use soap and cold water to clean the filter. Using a bristle brush is recommended - something like a toothbrush would work well. Do not put the filter in boiling water or in the dishwasher as it cannot withstand that hot of water.

4) Once clean, you will take the concaved side of the filter and push it into the top of the filter cap. You then take the blue filter housing and screw back onto the cap.

Filter Information Continued On Next Page

Click Play Button For Video

General Information Cont.

Filters Continued

To clean the small in-line filter:

1) Unplug the chiller

2) Depending on your tub type, you will either want to put a plug in the bottom hole of the tub to stop the water flow, close a valve, or simply manually kind the tubing line so that when the filter is removed, water does not pour out of the tubing.

3) Unscrew the clear housing.

4) Remove the filter. Use soap and cold water to clean the filter. Using a bristle brush is recommended - something like a toothbrush would work well. Do not put the filter in boiling water or in the dishwasher as it cannot withstand that hot of water.

Make sure to note of your flow rate when you first hook up the system. If you notice your flow rate slowing, this means it's time to clean out your filter. Do not run the chiller without flow.

If you do not clean your filter on a regular basis (at least once a week), you will damage the chiller. Penguin Chillers will not be responsible for damage caused from improper care of the chiller.

General Information Cont.

Additional Chiller Maintenance

To clean the internals of the chiller, you can use white vinegar and hot water. Fill a bucket with 1-2 gallons of white vinegar with hot water and recirculate it through the chiller for a couple hours. This can be done seasonally.

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The Cold Therapy Chiller is weather rated, but **only above freezing ambient temperatures**. If you are in an area that gets to 32F or lower, **the chiller needs to be unplugged, drained, and stored for the season.** To drain the chiller, you can use a shop-vac to remove residual water, or simply hold it upside down with the inlet/outlet ports pointing to the ground.

If your chiller is left outdoors below freezing ambient temperatures without being drained and damage occurs, Penguin Chillers is not liable for the damage. It can be returned to our facility for repair, but will not be covered under warranty.

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The left side coil of the chiller can become dusty/dirty overtime. If it's dirty enough to reduce airflow, the cooling capacity of the chiller will be reduced. Regularly using compressed air to blow the coils off will keep the chiller performing as efficiently as possible. If the setup is outdoors, you can take a regular garden hose and spray off the coils.

The frequency of these cleanings highly depends on your operating environment. Yearly coil cleaning for indoor setups should be sufficient for most users, however, if you know you are operating in a particularly dusty/dirty environment, or outdoors, then you'll want adjust your cleanings accordingly.

General Information Cont.

Digital Controller

When you set the temperature on the controller, ensure that the clear cover is opened.

View the controller manual here: Controller Manual

The controller constantly monitors your systems incoming water temperature.

When your systems water temperature moves above your desired set point, the controller tells the compressor to turn on and begin cooling the water. Once your desired set point temperature is reached, the compressor turn off. - The fan will only come on as need be to cool the unit depending on ambient temperature.

Ozone

If ozone is introduced into the system, it needs to be placed as far away from the chiller as possible so it has time to dissipate prior to entering the chiller.

We *highly* recommend separating the ozone from the chiller entirely. In order for ozone to work correctly, it has to reduce water flow. Even with a bypass where some of the water is going through the venturi/ozone, and some directly through the chiller, it almost always causes issues.

General Information Cont.

Timers

A common question we receive is whether or not it is okay to use a timer with the chiller/pump. We **do not recommend that you use a timer** in your setup. You'll want to keep the water cold at all times for a few different reasons:

- Cold water keeps bacteria (slimy walls) largely under control by slowing or stopping their growth. This significantly reduces the amount of maintenance needed to keep your water clean for longer periods of time. This means less frequent water changes and much lower levels of sanitizer being needed for an effective dose (chlorine/hydrogen peroxide/etc.).

- If you are using it on a regular basis the amount of potential power savings will be fairly insignificant, the heat it would gain in the "off" period still needs to be removed when you turn it back on. So if running normally costs $18-$28/month you might be able to save $3-$5/month. However, you'll have to change water more often so it is unlikely to be a net cost savings.

- When you cut power to the chiller you also cut power to the pump. Pumps get the most wear and tear during startup, that's when a pump is most likely to fail as well. Cycling the power to the chiller is just adding unnecessary wear and tear to the pump.

Troubleshooting

***My chiller isn't cooling*:**

- Does the chiller LCD have power? (If not, check GFI plug)
- Is there a LED/Working Light symbol that is lit up on the controller? If there is no light indicating the controller is calling for cooling, check controller settings.
- Does the Compressor come on?
- Is the controller readout steady or does it jump around?
- Is there a noticeable amount of air coming out the right side of the chiller (air is not blocked/coil not clogged)?
- Is the air coming out the right side of the chiller warm/hot OR room temp?

If warm air is coming out the back, the chiller is cooling, at least partially. The question becomes why is it not working to your expectations / it's full potential.

Check the water temperature with an external thermometer (not an IR gun). It is possible that the water is cold and the controller is providing an incorrect reading.

When referring to a Temperature, please clearly identify what the specific sources are.

- Ambient air temperature.
- Chiller set point or chiller reading.
- External thermometer to measure the waters actual temperature.

There are many sources of temperature, clearly identifying which temperature you are referring to is critical to an accurate and speedy assessment of the issue.

Troubleshooting

I'm not getting water flow back into my tub/tank:

- Have you verified that the water isn't being cut off by a dirty filter?
- If there's a valve on the drain of the tub, make sure it's fully open.
- Unplug the chiller (**never leave plugged in if you don't have flow**). With the chiller being unplugged for at least 30 minutes:

  - Take the filter out of the housing, put the housing back on empty.

  - Undo the fitting at the inlet of the chiller, there should be very good gravity flow of water, reconnect fitting on the inlet.

  - Take the fitting off the outlet, ensure there is good gravity flow here as well, then reconnect.

  - Disconnect the fitting at the filter connection, move the tubing down to the ground, water should be flowing, plug the chiller in and water flow should begin to increase, you can then reconnect the fitting to the filter.

If you have any issues where you aren't getting water when disconnecting the fittings, please state at what point in the process you are not seeing the gravity fed water. (Inlet, outlet, filter hose, etc.)

If the above mentioned steps did not work, remove the tubing line coming from the “outlet” of the chiller.

Take a garden hose and put it up to the outlet and flush the system backwards. Once you do so, you will see air bubbles coming back up into your tub. You can flush the system for 15-30 seconds or so until you stop seeing air bubbles coming into the tub. Once you stop seeing the bubbles, re-connect the tubing line to the “outlet” turn the chiller on.

All chillers come with a 1 year warranty. Certain chillers are offered with an optional extended warranty for an additional charge. The length of warranty will be determine by your purchase, minimum of 1 year.

Penguin Chillers warrants the Chiller to be free from defects in materials and workmanship. The warranty term begins on the date of purchase. This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. Penguin Chillers' warranty liability extends only to the replacement cost of the product. Penguin Chillers will not be liable for any consequential, indirect, or incidental damages of any kind, including lost revenues, lost profits, or other losses in connection with the product. Some states do not allow limitation on how long an implied warranty lasts or the exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you. Penguin Chillers will, at our discretion, repair or replace the Chiller covered under this warranty. To request warranty service, please contact our technical support via email: support@penguinchillers.com.

If this product is returned to Penguin Chillers for repair the customer is responsible for shipping charges to get the chiller to Penguin Chillers. The chiller needs to be properly packaged for safe transport. This product must be insured during shipment. Customer assumes all risks of loss or damage during shipment. After receiving the package Penguin Chillers will repair or replace the chiller at our discretion. Penguin Chillers will repackage and ship the chiller back to you at no additional cost within the continental 48 states, surcharges may apply outside of the continental 48 states. Penguin Chillers will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Penguin Chillers will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any installation cost of this product.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, PENGUIN CHILLERS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF PENGUIN CHILLERS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO PRODUCT AS PROVIDED UNDER APPlICABLE LAW.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Penguin Chillers or (iii) this product is not purchased from an authorized Penguin Chillers reseller. If you are unsure whether a reseller is an authorized or not, contact us.

Resources

A Controller Guide was included with your chiller. Please see the FAQ Page on our website to view a copy of the controller guide and other helpful information.

Our Contact Information

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