2022-6598
2024-01-18

CLEARBLUE IONIZER CBI-350

COPPER ION RELEASING DEVICE

HELPS PREVENT ALGAE AND BACTERIAL GROWTH IN SWIMMING POOLS AND SPAS

DOMESTIC

A MAXIMUM OF 151,400 L (40,000 GALLONS) OF WATER CAN BE TREATED WITH THE CLEARBLUE IONIZER CBI-350

Maintain 0.2-0.4 ppm Copper

MADE IN CANADA

READ THE LABEL AND THE INSTALLATION AND OPERATION MANUAL BEFORE USING

KEEP OUT OF REACH OF CHILDREN

REG. NO. 35062 P.C.P. ACT

Manufactured by ClearBlue Ionizer Inc.

1-3170 Ridgeway Dr.
Mississauga ON L5L 5R4

Tel. (866) 704-8404
support@clearblueionizer.com
www.clearblueionizer.com
MADE IN NORTH AMERICA

ClearBlue Ionizer Replacement Mineral Cell

Replacement cell for the copper generating device ClearBlue Ionizer CBI-350. REG. NO. 35062 P.C.P. ACT. This cell must only be used on this model of copper generating device.

Read the label and refer to Owner's Manual of the copper generating device ClearBlue Ionizer CBI-350.

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⚠️

Please carefully read and save these instructions.

Thank you for purchasing a ClearBlue mineral system. This device will assist in controlling bacteria and algae in pools and spas by augmenting the bactericidal and algicidal activity of primary disinfectants such as chlorine or bromine. Once the copper concentration has reached the required level of 0.2 – 0.4ppm, maintain 0.5 – 3ppm of free available chlorine in pools and 0.5– 5ppm of free available chlorine in spas. Regulated pools must follow provincial, state, or municipal guidelines.

⚠️

READ AND FOLLOW ALL INSTRUCTIONS

- **NOTICE: To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.**
- This unit is only water resistant when the mineral cell cable is plugged into the cell receptacle. Failure to do this may result in internal water damage.
- Use this equipment only for its intended use as described in this manual.
- This system should be serviced only by the manufacturer. Contact the manufacturer for examination, repair, or adjustment.
- Do not immerse cord or plug in water.
- Keep cord away from heated surfaces.
- Heavy bather loads may trigger the need for additional chlorine/bromine.
- Check the expiry date of the test kit as test results may be inaccurate if used after that date.
- Use a registered or scheduled pool or spa sanitizer to maintain an appropriate chlorine/bromine residual in the water.
- The average life expectancy of the mineral cell is six months in a pool, 2.5 years in a spa or hot tub (2160 "on" hours)
- When replacing the mineral cell, use replacement cells having a label that clearly states that it is a replacement mineral cell for a mineral ion releasing device manufactured by ClearBlue Ionizer Inc.

Electrical Requirements

The retailer and manufacturer cannot accept any liability for damage to the equipment or personal injury resulting from failure to observe the correct electrical connection procedures.

⚠️

NOTICE: Risk of Electric Shock. Connect only to a grounding type receptacle protected by a ground-fault circuit-interrupter

NOTICE: A ground-fault circuit-interrupter (GFCI) should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the unit without the test button being pushed, a ground current is flowing, indicating the possibility of an electric shock. Do not use this unit. Disconnect the unit and have the problem corrected by a qualified service representative before using.

NOTICE: To reduce the risk of electric shock, replace systems with a damaged cord immediately.

⚠️

SAVE THESE INSTRUCTIONS

Installation Instructions for Pools

The ClearBlue system install requires three components that are included in the kit. You will also need a hacksaw or reciprocating saw or PVC pipe cutters, PVC primer and PVC glue that are not included.
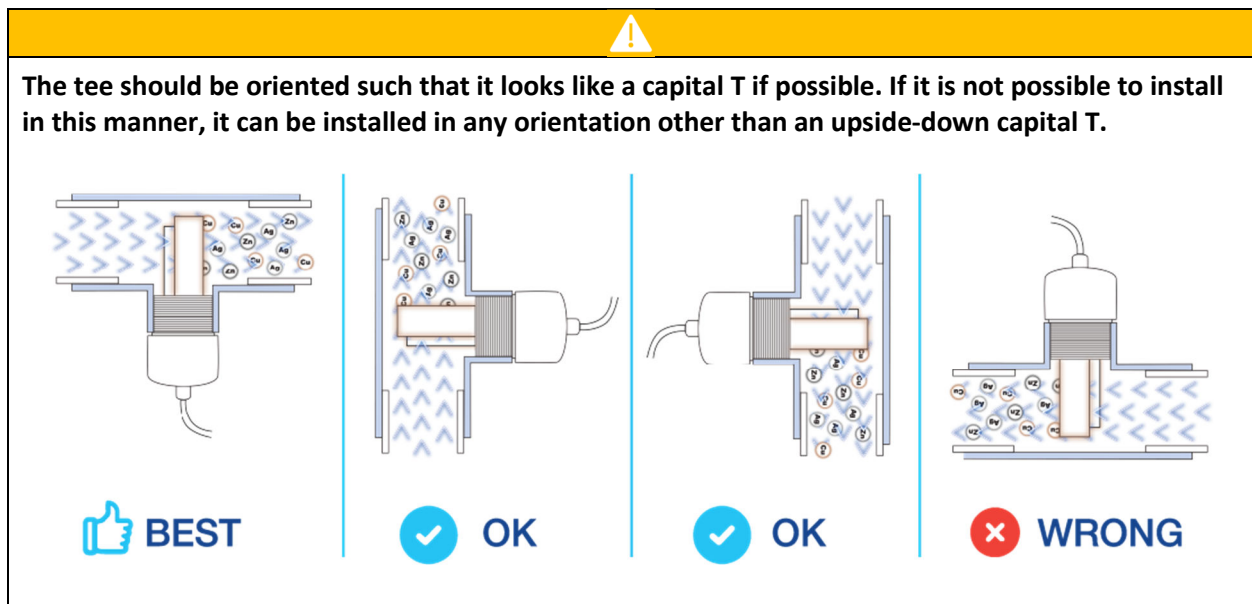

System Controller   **Clear PVC Tee**   **Mineral Cell**

Install the Tee

The tee is installed by gluing it into your pool PVC plumbing. The ideal spot for it is on the return line, after the pump, filter, and heater (if applicable). If you have a salt or inline chlorinator installed, the tee should go *before* the chlorinator. If you do not have space on the return line for the tee, it can go anywhere in the plumbing that it fits.

⚠️

The tee should be oriented such that it looks like a capital T if possible. If it is not possible to install in this manner, it can be installed in any orientation other than an upside-down capital T.

👍 BEST   ✅ OK   ✅ OK   ❌ WRONG

Cut plumbing and glue in the tee

1) Turn off the pool pump and let the water drain out of the pipe
2) Cut a 2.5" (63mm) section out of the PVC plumbing using a saw or PVC pipe cutters
3) Remove any dust and burrs from the pipe
4) Apply PVC primer and glue both to the outside of the pipe and the inside of the tee
5) Slide the tee over the pipe on one side as far as it will go and then the other side

6) For each glue joint, hold the tee in place for 30 seconds
7) Let the glue dry for 24 hours before turning on the pump

Install the Mineral Cell

Once the PVC glue has dried, you can install the Mineral Cell by threading it into the tee. **Teflon tape is not needed.** Tighten the cell until it is hand tight. Orient the bars such that the water will flow between the two bars (or as close as possible with no leaking). Once the controller is mounted, you will plug the cell into the controller.

⚠
Unplug or turn off the power to the controller before plugging in or unplugging the cell. Otherwise, you could damage the control board.

Install the System Controller

The system controller can be mounted on a wall, wood post, the side of the filter, or anywhere else that it can be fastened with screws or Velcro tape. Make sure that the power cable for the controller reaches the power source and the cable from the cell reaches the controller. The controller is rated for outdoor use, but it should be protected from rain and out of the direct sunlight for longest life. Placing the controller in a hut or weatherproof enclosure is recommended.

If you are hard wiring the controller into a 240V panel, you can have an electrician clip off the plug and wire it per local electrical code. Once you have mounted the controller, you can plug the mineral cell into the receptacle on the bottom of the controller.
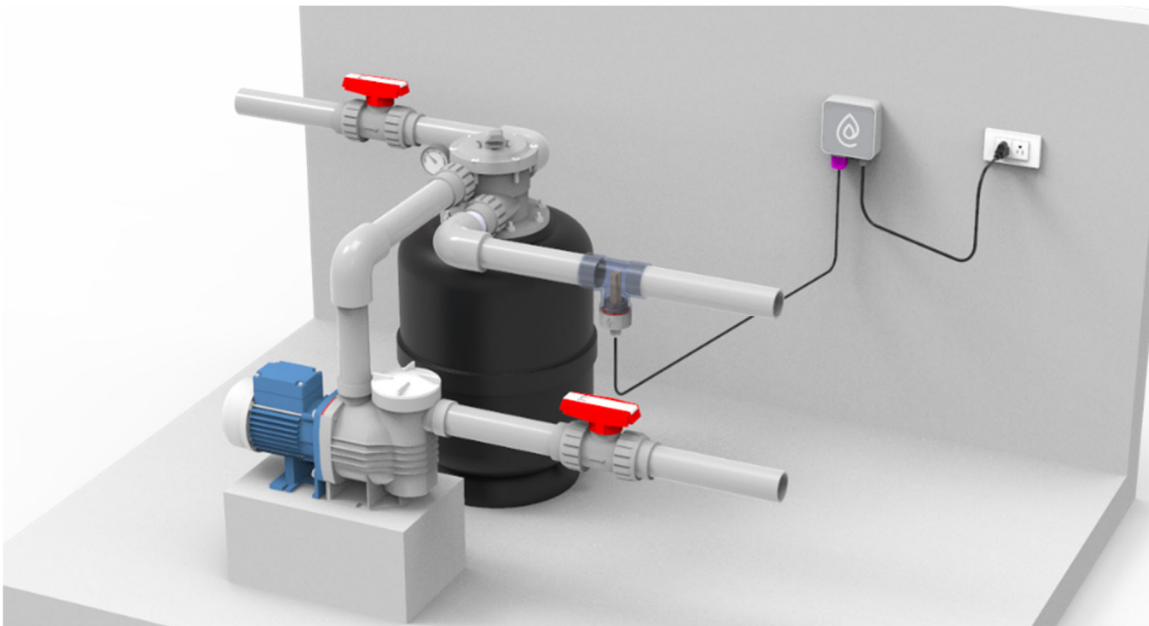
⚠
Check out this installation video for pools: https://youtu.be/SGAK0yD6630
⚠
The same controller can be plugged into a 120V wall outlet or wired to a 240V panel.
⚠

Make sure that the power cable for the controller reaches the power source and the cable from the cell reaches the controller.

<table>
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</table>

When the cell cable is plugged into the controller and the housing is completely threaded into the tee with the two electrode bars under water, the *Mineral Action* light will illuminate or flash blue. If the *Mineral Action* light is flashing red, make sure that the cell is plugged in all the way and the two electrode bars are completely under water.

<table>
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</table>

If your controller has a standard wall plug, it must be plugged into a GFCI protected outlet.

System Controller Configuration
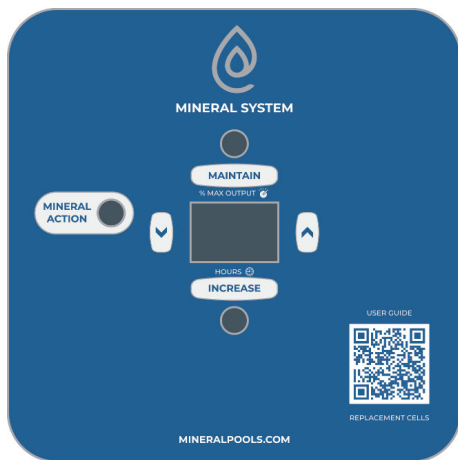
Maintain

The *Maintain* setting is the maintenance setting. It represents a **percentage of the maximum output level** and is set according to your pool or hot tub size. For example, a *Maintain* setting of 88 means the controller is outputting minerals at 88% of maximum output. Use the ˅ and ˄ keys to increase or decrease the number and reach the desired setting. When the controller is set to *Maintain*, the blue light above the *Maintain* button will illuminate and the *Mineral Action* light will be solid blue.

Increase

The *Increase* setting is the ramp-up setting. It represents the **number of hours that the controller is set to maximum output**. For example, an *Increase* setting of 88 means the controller will run on 'full blast' for 88 hours. As the hours count down, the number will decrease by one each hour until it gets to 01. After the final hour, the controller will switch automatically to the *Maintain* mode.

Use the ˅ and ˄ buttons to increase or decrease the number and reach the desired setting. When the controller is set to *Increase*, the blue light below the *Increase* button will illuminate and the *Mineral Action* light will be flashing blue.

⚠

The *Increase* setting should be used when:
  1) **First filling the pool**
  2) **Refilling in the Spring or throughout the season**
  3) **Copper level has not reached 0.2ppm or dips below 0.2ppm**

⚠
Use the calculations below to calculate the setting for *Maintain* and *Increase*. *Maintain* and *Increase* can be set to the same value.
⚠
Use the *Increase* Function as many times as needed until the copper level reaches 0.2ppm.
⚠
Set the *Maintain* setting first, then set the *Increase* setting. The *Increase* timer will count down and then switch automatically back to the *Maintain* setting.
⚠
It is important to balance the water according to the table on page 11 before ramping up the minerals.
⚠
Warning: Staining of pool surfaces may occur due to deposit of copper salts. Excessive levels of copper will increase the probability of this occurrence.
⚠
The setting calculations are guidelines only. You must use a copper test and increase or decrease the *Maintain* setting as required to ensure the copper level is maintained at 0.2ppm to 0.4ppm.
⚠
DO NOT REDUCE CHLORINE/BROMINE CONCENTRATION UNTIL COPPER LEVEL REACHES 0.2PPM

Calculating Pool Volume

The ClearBlue controller settings are based on the volume of water in your pool or hot tub. Please use the calculations below to determine your water volume.

Pool Type	Calculation (Using Feet & Gallons)	Example
Rectangle	$Length \ x \ Width \ x \ Avg.Depth \ x \ 7.5 = Volume \ (gal)$	**16 ft x 32 ft x 4 ft deep, 8 ft deep end** $16 \ x \ 32 \ x \ 6 \ x \ 7.5 = 23{,}040 \ gal$
Circle	$Diameter \ x \ Diameter \ x \ Avg \ Depth \ x \ 5.9 = Volume \ (gal)$	**24ft round pool x 4ft deep** $24 \ x \ 24 \ x \ 4 \ x \ 5.9 = 13{,}594 \ gal$
Oval	$Long \ Dia. \ x \ Short \ Dia. \ x \ Avg \ Depth \ x \ 5.5 = Volume \ (gal)$	**18ft x 33ft oval pool x 4ft deep** $33 \ x \ 18 \ x \ 4 \ x \ 5.5 = 13{,}068 \ gal$
Irregular Shape	$Length \ x \ (Width \ 1 + \ Width \ 2) \ x \ 0.45 \ x \ Avg \ Depth \ x \ 7.5$ $= Volume \ (gal)$	**16 ft long 5 ft deep kidney pool** $16 \ x \ (8 + 10) \ x \ 0.45 \ x \ 5 \ x \ 7.5 = 4860 \ gal$
Average Depth	$$\frac{Deep \ End \ Depth + Shallow \ End \ Depth}{2}$$	**4ft deep pool with 8ft deep end** $$\frac{8 + 4}{2} = 6$$

Metres to Feet	Length in Metres x 3.281 = Length in Feet	10 metre long pool in feet 10 x 3.281 = 32.81 ft
⚠️		
For the water volume of a hot tub, please consult your hot tub dealer or manual		

Maintain and Increase Setting from Gallons

The setting below is for BOTH modes.

Setting	Setting Calculation (Maintain and Increase)	Example
CBI-350x-S 2,500 gal max	$\dfrac{My\,Spa\,Volume\,in\,Gallons}{2,500\,Gallons}\,x\,33$	$\dfrac{750\,Gallons}{2,500\,Gallons}\,x\,33 = 10$
CBI-350x-18 18,000 gal max	$\dfrac{My\,Pool\,Volume\,in\,Gallons}{18,000\,Gallons}\,x\,100$	$\dfrac{10,000\,Gallons}{18,000\,Gallons}\,x\,100 = 56$
CBI-350x-25 25,000 gal max	$\dfrac{My\,Pool\,Volume\,in\,Gallons}{25,000\,Gallons}\,x\,100$	$\dfrac{15,000\,Gallons}{25,000\,Gallons}\,x\,100 = 60$
CBI-350x-40 40,000 gal max	$\dfrac{My\,Pool\,Volume\,in\,Gallons}{40,000\,Gallons}\,x\,100$	$\dfrac{31,000\,Gallons}{40,000\,Gallons}\,x\,100 = 78$

Maintain and Increase Setting from Litres

The setting below is for BOTH modes.

Setting	Setting Calculation (Maintain and Increase)	Example
CBI-350x-S 9,500 L max	$\dfrac{My\,Spa\,Volume\,in\,Litres}{9,500\,Litres}\,x\,33$	$\dfrac{2,840\,Litres}{9,500\,Litres}\,x\,33 = 10$
CBI-350x-18 68,100 L max	$\dfrac{My\,Pool\,Volume\,in\,Litres}{68,100\,Litres}\,x\,100$	$\dfrac{37,850\,Litres}{68,100\,Litres}\,x\,100 = 55$
CBI-350x-25 94,650 L max	$\dfrac{My\,Pool\,Volume\,in\,Litres}{94,650\,Litres}\,x\,100$	$\dfrac{56,780\,Litres}{94,650\,Litres}\,x\,100 = 60$
CBI-350x-40 151,400 L max	$\dfrac{My\,Pool\,Volume\,in\,Litres}{151,400\,Litres}\,x\,100$	$\dfrac{117,350\,Litres}{151,400\,Litres}\,x\,100 = 78$

Program Lock (PL)

The Program Lock feature allows you to the lock the controls so that they are not inadvertently changed. To activate the Program Lock, press and hold the ∨ and ^ keys simultaneously for 20 seconds or until 'PL' is shown on the two-digit number screen. Do the same to remove the Program Lock.

High Power Mode (Decimal on Number Screen)

If the cell is almost used up or the total dissolved solids (TDS) level of the water is low, the controller will go into High Power Mode which is indicated by a decimal on the screen. If the system switches into High Power Mode, it is recommended to check the cell and test the TDS. Increase TDS if needed according to the levels given on page 11.

⚠️
High Power Mode may be activated when the mineral cell is low. If the decimal appears but the TDS is in range, check the cell. If the bars are worn down to 0.5" (10mm) or below it is time to change it.

Topside Control Option (Hot Tubs Only)

Topside control found on some hot tubs

Topside Mineral Action Indicator

When the mode of the controller is set to *Maintain* and the *Mineral Action* light is illuminated on the controller, the area in the center of the topside control will illuminate in blue.

Topside Increase Function

Press the center of the logo to engage the *Increase* mode for the number of hours programmed on the controller. When *Increase* is active, the area in the center of the topside control will flash in blue. Once the cycle expires, the controller will go back to *Maintain*, the center area will illuminate in blue, and the flashing will stop. To stop the *Increase* mode before the cycle finishes, hold down the button in the center of the logo for 10 seconds.

Turn Off Mineral Action

If the mineral level is too high, or you would like to stop the release of minerals for any other reason, hold down the button in the center of the logo for 10 seconds or until the blue light goes off.

Turn On Mineral Action

If the mineral releasing function has been turned off, press the button in the center of the logo to turn it back on. The center of the logo will illuminate in blue to indicate that the system is releasing minerals.

Topside Cell Connection Indicator

When the mineral cell is unplugged, the electrode bars are not under water, the TDS of the water is too low, or the cell is worn past its useful life, the light in the center of the topside control will flash red.

Replacing the Mineral Cell

The mineral cell will last 3 – 12 months in a pool and 2 – 3 years in a hot tub depending on the volume of water, the temperature of the water, the amount and intensity of sun reaching the water, and usage. In a pool, the first cell will always wear down faster because it is used up quicker to ramp up the minerals.

⚠️
Unplug or turn off the power to the controller before plugging in or unplugging the cell. Otherwise, you could damage the control board.

It is important to check the cell regularly and make sure there is still some material left on the bars. If

the bars are worn down to 0.5" (10mm) in length or below, it is time to change the cell. When the cell is completely used up, the *Mineral Action* light will flash red.

⚠
For a pool, it is recommended to change the cell before the start of the pool season or at least every 6 months. For a hot tub, it is recommended to check the cell every 6 months and remove any scale that has formed on the electrode bars.

⚠
To maximize the life of the mineral cell: 　　1) **Keep the copper level at 0.2ppm** 　　2) **Cover the pool when it is not in use** 　　3) **Keep the chlorine/bromine level between 0.5ppm to 1ppm** 　　4) **Use a chlorine or non-chlorine shock once per week** 　　5) **Keep phosphates low**

⚠
If the mineral cell life is less than 3 months or you are having trouble reaching 0.2ppm copper, even with multiple *Increase* settings, make sure that the phosphate level of the water is below 200ppb. Phosphates act like fertilizer for algae, so the minerals are used up quicker fighting off rampant algae growth. Your pool water can be tested for phosphates at your local pool store. There are several products available that will reduce the phosphate level in your pool.

⚠
It is important to change the cell before it is completely used up. This is to ensure that the mineral levels do not drop off which can lead to green water. Green water is unsafe and requires expensive treatments to clear. Change the cell when the bars are worn to 0.5" (10mm) in length or below.

Pool and Water Maintenance

⚠
For the best results from your mineral pool, it is important to start with clean water, keep water parameters in range, maintain a low chlorine/bromine residual and oxidize excess organic material on a regular basis.

Opening your Pool

When you open your ClearBlue mineral pool, you can follow the instructions of your pool builder or pool store. They may recommend an opening kit with products designed to condition the water and get you swimming as quickly as possible.

Opening kits sometimes use a 'stain and scale remover' or other type of sequestering agent. We do not recommend using this type of product because it will remove the ClearBlue minerals and neutralize new mineral production for up to 6 weeks.

If your mineral cell is more than six months old, it should be replaced when you open your pool.

Filling your Pool

We recommend using a pre-filter that attaches to your garden hose when filling your pool. The pre-filter removes unwanted metals and sediment from the water, so the water is as pure as possible for your use. If you live in a rural area and are filling from a well, this is even more important.

> ⚠️
>
> **Metal removers, sequestering agents and some stain removers conflict with ClearBlue. If one of these products is used, it will remove the ClearBlue minerals and neutralize minerals for up to 6 weeks. Unplug or power off the ClearBlue controller for at least 4 weeks after using these products to prevent unnecessary wear to the cell.**

Water Parameters

For the best results, maintain the water parameters in the following ranges.

> ⚠️
>
> **Apart from the copper and low level of chlorine, the water parameters below are standard for any pool or hot tub.**

> ⚠️
>
> **It is important to balance the water according to the table below before ramping up the minerals.**

Parameter	Range	Notes
Copper	0.2 – 0.4ppm	Once 0.2ppm is reached, test for copper every two weeks
pH	7.2 – 7.6	pH out of range will cause the water to feel harsh
Alkalinity	80 – 120ppm	
Calcium	200 – 400ppm	Calcium below 200ppm will cause etching to pool surfaces and equipment; Calcium above 400ppm can lead to scaling
TDS	500 – 2,000ppm	Low salt systems are recommended for saltwater pools
Phosphates	<200ppb	It is critical to keep phosphates low to maximize the life of the mineral cells and minimize chlorine/bromine usage
Chlorine	Pools: 0.5 – 3 ppm Spas: 0.5 – 5 ppm	Pools : Chlorine should be 1 – 3 ppm until copper reaches 0.2ppm Spas: Chlorine should be 1 – 5 ppm until copper reaches 0.2ppm
Cyanuric Acid (Stabilizer)	30 – 50ppm	If your stabilizer is above 50ppm, use unstabilized chlorine

Regular Water Maintenance

For your pool water to look, feel and smell the best, it is important to maintain a low level of chlorine or bromine and oxidize regularly.

⚠
We recommend using one 3" chlorine or bromine tablet (1" for hot tubs) per week and oxidizing with a chlorine or non-chlorine shock once per week.

⚠
Adding an inline chlorine reservoir to your filtration system is a low-cost way to minimize the chlorine maintenance. Simply fill the reservoir with chlorine or bromine tablets and set the setting to 25% of maximum. Check weekly to make sure there are still tablets inside.

⚠
Using a non-chlorine shock once per week is a fast and easy way to keep lotions, sunscreens, and organic material from building up in the water.

Closing the Pool

When closing your pool, you can follow the closing instructions from you pool store or pool service. If they recommend a closing kit, take note if there is a stain and scale or other sequestering product used as part of the closing. This product is optional and if skipped, the minerals will keep fighting algae and microorganisms in the water throughout the winter. You will find that the water is cleaner and clearer in the Spring when you open the pool.

We recommend bringing the system controller indoors for the winter. If there is still life left on the cell, you can leave it in the tee, but you must wrap up the plug end so that the winter weather does not corrode it.

Cleaning and Care

System Controller

Clean the controller with a soft cloth dampened with water as needed. Do not use any type of cleaner on the front control panel or plastic housing.

Mineral Cell

If your water is high in calcium, the electrode bars on the mineral cell may become coated with a white or blue scale. Check the cell every 6 months and remove the scale with a standard metal file. The surface of the bars does not have to be polished.

⚠
If the bars are too scaled up for the system to release minerals, the *Mineral Action* light on the controller will flash red.

⚠
On a hot tub or swim spa: If the Total Dissolved Solids (TDS) is too low, the *Mineral Action* light on the controller and in the center of the topside (if applicable) will flash red. You can fix this by adding salt to the water. Make sure that the pump is running. Add ½ cup of salt every 10 minutes until the light comes on blue.

Troubleshooting

Problem	Possible Cause	Solution
The *Mineral Action* light is flashing red	The cell is not plugged in all the way	Make sure the cell cable is completely plugged into the controller
	The electrodes are not under water	Make sure the electrode bars are completely under water. An air pocket can form when the pump is not running, and the tee is installed upside down.
	The cell is worn down past its useful life	Change the mineral cell
	There is scale on the electrodes	File the scale off the electrodes with a metal file
	On a hot tub or swim spa: The Total Dissolved Solids (TDS) is too low	Make sure the pump is running and water is circulating. Add ½ cup of salt every 10 minutes until the ionizing light turns blue
I cannot get my copper level to reach 0.2ppm	You have not used the *Increase* function	Set the controller to *Increase* and set the number to 99. After 99 hours (about 4 days), test again. If your copper level is below 0.2ppm, do another 99-hour *Increase mode*. Repeat until 0.2ppm copper is reached
	The *Maintain* setting is too low	If you find that the copper level reaches 0.2ppm but then drops off, set your *Maintain* setting higher to compensate
	There is not enough chlorine in the water	The chlorine or bromine should be maintained at 1-3ppm in pools and 3-5 ppm in spas until the copper level reaches 0.2ppm. Once the copper level reaches 0.2ppm, you can reduce the chlorine/bromine concentration to 0.5-1ppm
	The mineral cell needs to be changed	Check the electrode bars on the mineral cell. If they are 0.5" (10mm) or shorter, it is time to change the cell
	The phosphate level in the water is too high	Have your water tested for phosphates at a pool store. If the phosphate level is above 200ppb, use products recommended at the store to bring it down. If you live in a rural area, you may need to reduce the phosphate level on a regular basis
	The test kit is expired	Check the expiry date on the test kit and purchase a new one if it is expired
	The test kit instructions are not being followed	Be sure to read the test kit instructions and follow them exactly
There is no power to the controller	The power outlet is dead	Check the power to the outlet by plugging in another appliance
	The controller is dead	Test the controller in another outlet that you know works. If there is still no power, see Warranty section below
The controller display shows 'PL' and I can't change the settings	The controller is set to Program Lock	Press and hold the ˅ and ˄ buttons simultaneously for 20 seconds or until the PL changes back to a number
There is a decimal place showing on the display after the numbers	The Total Dissolved Solids (TDS) of the water is low	Increase the TDS to the range recommended above
	The cell is scaled up or almost worn out	Clean off scale with a metal file or change the mineral cell

Specifications

Spec	Value
Input Voltage	100 – 240 Volts AC
Input Frequency	50 to 60 Hertz
Output Voltage	38 VDC Max
Output Current	0.20 AMP Max
Controller Outside Dimensions	120mm x 121mm x 37mm / 4 ¾" x 4 ¾" x 1 ¾"
Shipping Weight for Complete Kit	3.6 lbs / 1.6 kg
Shipping Size for Complete Kit	7" x 7" x 7" / 178mm x 178mm x 178mm
Mineral Cell Life	Average 6 months in a pool, 2.5 years in a hot tub (2,160 "on" hours)

Warranty

The ClearBlue mineral system controller is covered by a warranty. The length of the warranty is between 1 and 5 years, depending on the model. The mineral cells are designed to wear down and they do not have a warranty, however, they will be replaced free of charge if there is an obvious defect.

The make a warranty claim, send an email to support@clearblueionizer.com with the following information:

1) Photo of the serial number and model information on the back of the controller
2) Mailing address
3) Phone number

If a terminal problem is diagnosed, a replacement controller will be shipped within 14 days.

Contact

ClearBlue Ionizer Inc.
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www.clearblueionizer.com
support@clearblueionizer.com