

# Owners/Installation Manual

## Low-Chlo, LLC

Swimming Pool Water Sanitizer Models:

LC-20R/D (Up to 20K gallon systems)

LC-40R/D (Up to 40K gallon systems)

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## **The Low-Chlo Pool Sanitizer Description**

The LC-20R/D is 8" round X 28" height, weighs 32 pounds, and treats pools up to 20,000 gallons. The unit comes with a media tank, a tank head and bypass assembly with 1" pipe connections, 1" flex pipe, and a PVC bypass manifold in the retail model (R), not the dealer model (D). The tanks contain a proprietary blend of metallic media that kill bacteria, algae, etc., and prevents scaling while maintaining under 1ppm of chlorine.

The LC-40R/D is 8" round X 28" height, weighs 62 pounds, and treats pools 20K to 40K gallons. The unit comes with a media tank, a tank head and bypass assembly with 1" pipe connections, 1" flex pipe, and a PVC bypass manifold in the retail model (R), not the dealer model (D). The tanks contain a proprietary blend of metallic media that kill bacteria, algae, etc., and prevents scaling while maintaining under 1ppm of chlorine.

All models will require a bypass manifold for proper operation and the parts are included in the retail model (R), not the dealer model (D). Although some of the water will be bypassed around the Low-Chlo tank, as the water continually recirculates, eventually all the pool water is treated.

**A chlorinator placed between the pump and the filter is highly recommended for proper oxidation of the dead bacteria. The Rainbow 300 chlorinator and inline check valve are available on our website.**

## **How Does It Work?**

This process description begins at the existing pool filter:

1. As the water exits the pools filter it flows downstream through the return line back toward the pool.
2. It will then flow through the Low-Chlo Pool Sanitizer located between the pool filter (and heater if applicable) then to the pool. As the water flows through the Low-Chlo Pool Sanitizer all bacteria, algae, and viruses are killed; and almost all the chlorine is removed. The additional flow demand will go through the bypass plumbing and will eventually circulate through the sanitizer system.
3. The treated water then continues through the pool return jets where the water is placed back into the pool body with very low levels (<1ppm) of chlorine and up to 99.999% bacteria killed which is **equivalent to municipal drinking water**.
4. The water is then pulled from the pool body through the skimmer, where it will run over one or two 3" chlorine tablet(s) (depending on the size of the pool and water temperature) that is placed into the skimmer basket or chlorinator if applicable (see diagram on page 9 for chlorinator placement). The purpose of the chlorine tablet is to **oxygenate the dead bacteria** so it will catch in the pool filter.

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The dead bacteria should be removed from the pool filter as needed or the water may become cloudy. The dead bacteria are removed by cleaning/backwashing the filter as needed.

5. The recirculating process continues as the water continues back through the Low-Chlo Pool Sanitizer where living microorganisms continue to be killed and chlorine broken down or removed. The swimming area of the pool is fresh water with very low chlorine (less than 1 ppm).
6. This process will continue while the pool circulation pump is running. The system should be allowed to run continuously for 8-12 hours daily. *It is recommended to run the system during the daytime when sun is at its strongest (10am-6pm minimum for smaller pools, 8am-8pm for larger pools, or longer if running a low RPM through a variable speed pump) then stopped overnight. If there is a need to "shock" the pool, (USE LIQUID CHLORINE ONLY) the Low-Chlo system should be put in bypass mode for 24 hours, or longer if needed to allow the shock to work and lower back to 5ppm or less. Then open the system bypass back to the normal flow position for 24 hours to remove the residual chlorine from the shocking back to less than 1ppm.*
7. The Low-Chlo Pool Sanitizer helps maintain the pool's natural balance; however, it is recommended for the owner to monitor the following parameters and adjust as needed.

### **Recommended chemical levels ppm:**

<b>Chlorine</b>	<b>0-1.0</b>
<b>pH</b>	<b>7.2-7.8</b>
<b>Alkalinity</b>	<b>80-120</b>
<b>Cyan Uric Acid</b>	<b>40-80 (stabilizer/conditioner)</b>
<b>Calcium</b>	<b>200-400 (lower end for concrete pools and higher end for fiberglass pools)</b>
<b>Phosphates</b>	<b>Under 250</b>
<b>Nitrates</b>	<b>Under 10</b>
<b>Copper</b>	<b>Under 0.3</b>

**Important:** It is important to monitor the chemical levels the same as all pools. A very low pH-level could cause the metallic media in the Low-Chlo Pool Sanitizer to fall out of solution and stain the surface of the pool. The system will not work correctly if pH level is below 6.6 or higher than 8.6. Some older pools may use copper plumbing. In these circumstances, the single chlorine tablet should be placed downstream of the copper plumbing and before (or upstream) of the filter.

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## **Maintaining the wall and floor surface**

Now that your pool water is treated through the Low-Chlo pool sanitizer you will enjoy swimming in almost chemical free water. It's important to understand that since the water no longer contains a lot of chemicals, measures must be taken to maintain the surface of the pool walls and floor where algae start to grow unseen by human eyes. It is necessary to brush weekly or have a cleaning system that will contact the interior pool surfaces to remove any microorganisms that may attach if left untouched. There are many different types of units designed to do this. **We recommend the Maytronics Dolphin Robot pool vacuum cleaner that can be purchased through our website ([www.low-chlo.com](http://www.low-chlo.com))**

**Important:** Because the body of the pool is almost chemical free, we also recommend removing inflatables, toys, and other pool accessories as they can grow algae and slime over prolonged periods of time in the low chemical pool water.

## **PRE-INSTALLATION 1**

Prior to installation read the owner's manual and check for local code compliance.

**\*\*\*Test the pool water to ensure the chemical balance is at optimum levels (specifically the chlorine less than 5ppm, the pH between 7.2-7.8ppm, and the stabilizer/conditioner/CYA under 100ppm).\*\*\***

## **Check box for all system parts**

First remove the system from its packaging. You should have the following:

- ✓ 1- Owner's manual and associate paperwork
- ✓ 1- CuLater metal remover pack
- ✓ 1- Low-Chlo mineral tank with inlet/outlet head installed
- ✓ 1- Pressure gauge to be installed into the head unit
- ✓ 1- Head Bypass assembly pre-built w/elbows and 1" unions
- ✓ 2- Ten feet of 1" Flex PVC tubing with union tail ends
- ✓ 1- 2" bypass manifold parts with 2"x1.5" reducer bushing if needed (Retail Models)
- ✓ 1- Hose connector for annual back flushing

5.

## **Tank Flushing**

The Low-Chlo media tank may need to be flushed from time to time as very small debris can pass through some pool filters and get trapped in the media bed, or the other components inside the media tank. We recommend flushing prior to installation and at least annually after pollen season.

1. Turn off pool **(If brand new move to step #3)**.
2. Remove the Low-Chlo pool sanitizer from the pool system by disconnecting the union attachments from the "UPFLOW INLET" and "DOWNFLOW INLET". (first picture on the next page)
3. Connect the supplied hose connector to the portal marked "DOWNFLOW INLET". Attach garden hose to the hose connector then turn the water on and flush the tank. Dark gray or dirty water may flow from the outlet which is normal. Continue flushing the tank until the water becomes clear (no more than 3 minutes).  
**(NOTE: briefly running water into the "DOWNFLOW INLET" to flush the system will not harm the system.)**
4. Turn off the water and remove the hose connector and attach it on the portal marked "UPFLOW INLET" and flush until water becomes clear (no more than 3 minutes).
5. Turn water off.
6. Disconnect the hose from the connector then remove the connector from the tank and keep for future use.
7. Re-attach the Low-Chlo pool sanitizer to the pool system by connecting the union attachments back to the "UPFLOW INLET" and "DOWNFLOW INLET".
8. Turn the pool back on.

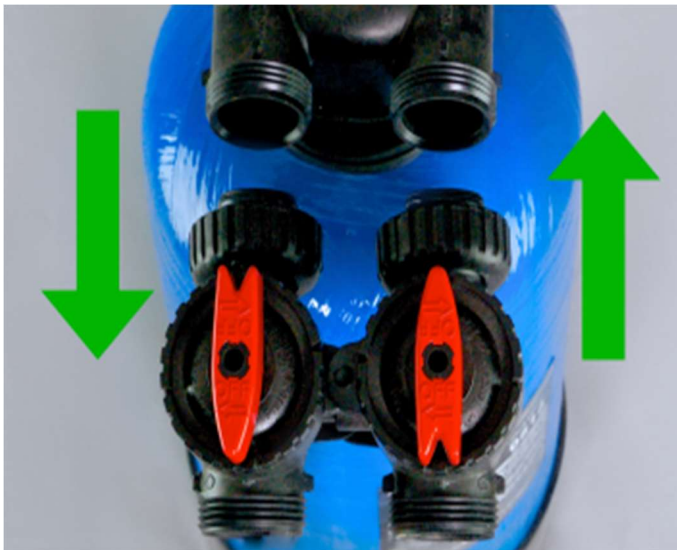
6.

## **INSTALL HEAD ATTACHMENTS:**

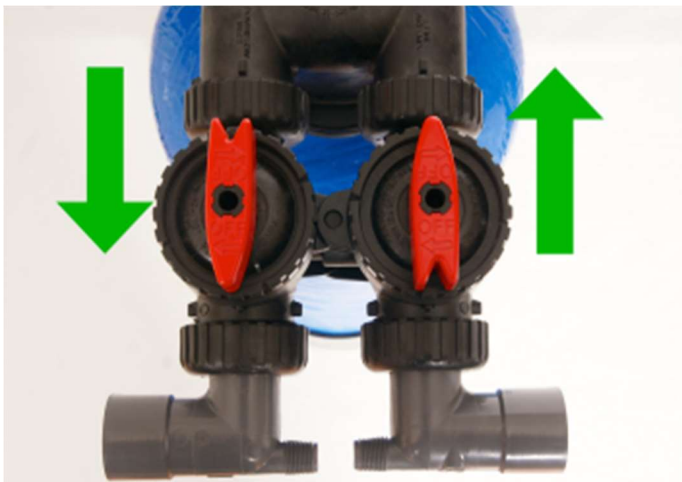
The installation process will be the same for Low-Chlo Water Products models:

**LC-20R/D and LC-40R/D.**

The bypass assembly comes assembled with red arrow flow indicators. The red arrows are to be facing up. Push the side with the O-rings and union nuts into the tank head as shown below and hand tighten. Note: The bypass should have arrows positioned as shown with the right arrow pointing toward the “IN” or “UPFLOW INLET” portal, and the left arrow away from the DOWNFLOW portal.



If the arrows are turned the wrong way, simply pull the arrow straight up off the peg, turn 180 degrees and reattach by pushing the arrow back onto the peg. Reposition the second arrow in the same manner, if necessary.



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## **PRE-INSTALLATION 2**

**The Low-Chlo Pool Sanitizer is easily installed with minimal skills however we recommend it be installed by a pool professional.**

First a bypass manifold must be attached to accommodate pool water flow requirements. The bypass parts are included in the LC-20R and LC-40R models, (not the dealer models).

1. Locate the return line after the filter on the way back to the pool.
2. Locate a space in the existing PVC plumbing just downstream from the filter (ideally before an existing heater, if possible, as the system will help descale the inside of the heater and lower the chlorine level prior to entering the heater). **A minimum of 16" and additional PVC fittings will be needed.** This is where the bypass manifold will be installed. Mark this area.
3. Make sure to have additional PVC fittings and piping on-hand to accommodate the manifold installation prior to moving to the next steps.
4. Once the location for the bypass manifold is determined, place the media tank on a level surface in a location that can be reached with the supplied 10' of flex piping for each inlet/outlet. The placement area for the media tank should be both serviceable, and out of the way of being able to service your other pool equipment (a yard paver or on the existing equipment pad is recommended).
5. The bypass manifold shipped with the Low-Chlo retail model tanks is ready to connect to 2" piping. If the existing piping is 1.5", utilize the included reducer bushings.

**IMPORTANT:** The PVC bypass manifold has a specific flow route indicated by arrows. The manifold must be installed according to the water flow pattern shown by the arrows to ensure proper flow through your pool plumbing system.

## **Installation:**

**Utilize PVC primer/cleaner and PVC cement to connect the PVC fittings and PVC manifold to the existing PVC piping.**

A. TURN THE POOL OFF.

B. Cut the PVC pipe on the return line where it was marked previously for the bypass installation (16" are needed, some PVC piping modifications and fittings will be needed. There are no standards in pool PVC plumbing so each installation may vary slightly).

C. After removing the PVC piping from the 2 cuts, start installing the additional PVC fittings (elbow, coupler, etc.) by cleaning the existing PVC piping with PVC primer/cleaner and then place a bead of PVC cement around the existing PVC pipe and attach the fittings and piping needed.

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D. Attach the bypass manifold to the new fittings/piping by also adding a bead of PVC glue to the inside of the end to be installed over the PVC piping. Make certain the 1" outlets will be facing the direction where the sanitizer will be positioned.

F. Glue the 1" PVC flex hose marked with a red arrow to the 1" outlet coming out of the 3way diverter valve in the bypass manifold. (Note: the PVC flex hose has a curve to it. Attach to where the curve works toward connecting to the Low Chlo system head valve and cut as needed).

G. Glue the 1" check valve with the black arrow pointing toward the "T" to the 1" outlet coming out of the PVC "T" in the bypass manifold. Then, glue the 1" PVC flex hose marked with a black arrow to the other side of the check valve. (Note: the PVC flex hose has a curve to it. Attach to where the curve works toward connecting to the Low Chlo system head valve and cut as needed).

H. Attach the other ends of the flex pipe to the unions attached to the tank head unit.

**IMPORTANT: Incorrect plumbing installation will damage the system! The flex piping coming out of the 3-way diverter valve marked with the red arrow will get attached to the "UPFLOW INLET" SIDE, OR RIGHT SIDE, WHEN FACING BOTH PORTALS OF THE TANK BYPASS. A proper flow pattern is required for water to enter the "UPFLOW INLET" PORTAL. The unions at the end of the flex piping will only attach to each specific portal on the tank head bypass.**

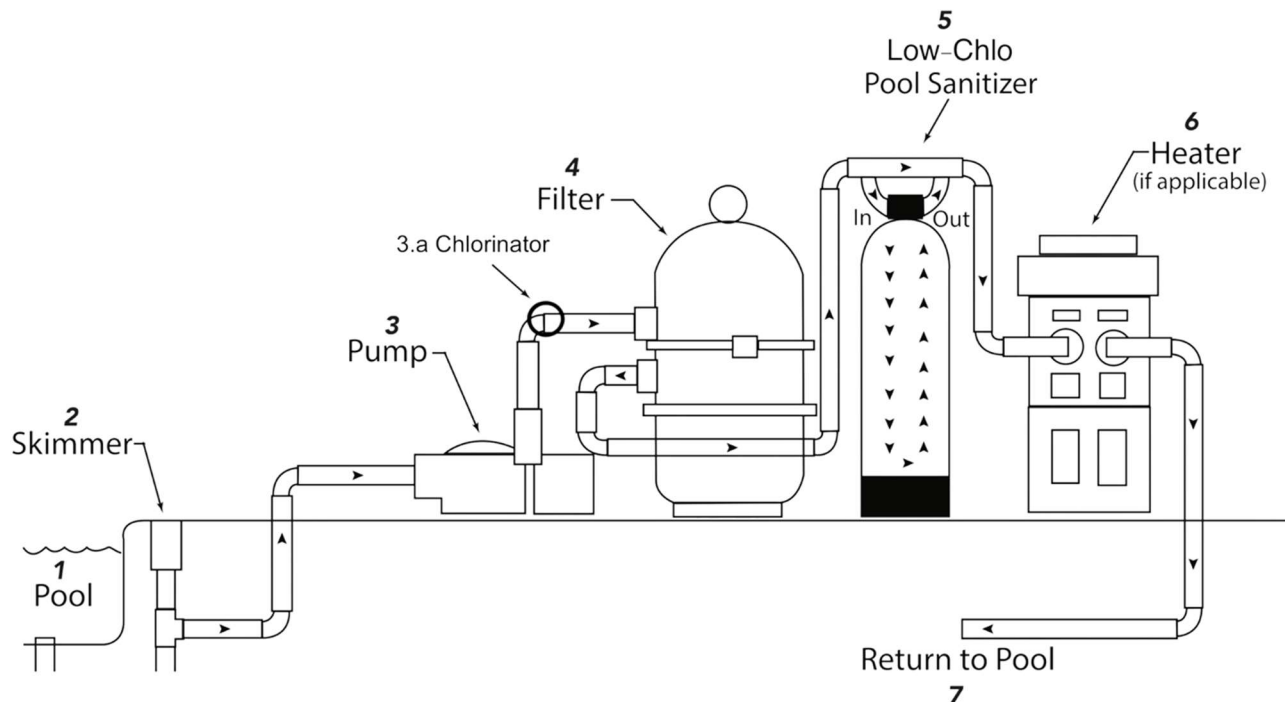
I. Screw the pressure gauge into the open threads on the tank head (gauge already has Teflon tape secured). DO NOT OVERTIGHTEN AS THE TANK HEAD COULD CRACK.

J. Turn the system on and then check for leaks.

K. Adjust the 3-way diverter valve in the bypass manifold accordingly to maintain between 3-20psi through the tank. If running a multiple speed pump, make sure the lowest speed will push at least 3psi and the highest speed only pushes 20psi. **PSI is measured on the pressure gauge on the head of the tank. Valve adjustment is very important as the system needs contact time with the pool water for the media to work properly.**



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## Winterizing

Follow these steps to properly remove the system for winterization:

1. Turn off pool.
2. Remove the Low-Chlo pool sanitizer from the pool system by disconnecting the union attachments from the end of the flex PVC piping and the tank head bypass.
3. Turn red arrow flow indicators to activate the tank head bypass and keep water from spilling from system.
4. Connect the 2 flex PVC hose-end union pieces together to enclose the pool system.
5. Proceed with normal pool winterizing process.
6. Place the sanitizer system inside where it will not freeze.

**WARNING! DO NOT ALLOW THE SYSTEM TO FREEZE. DAMAGE WILL OCCUR IF THE SYSTEM IS EXPOSED TO FREEZING TEMPRATURES. STORE SYSTEM FULL OF WATER. DAMAGE WILL OCCUR IF THE WATER IS DRAINED FROM THE SYSTEM FOR LONGTERM STORAGE.**

10.

## **How do I convert my salt chlorinated pool to a Low-Chlo pool?**

1. Connect the Low-Chlo Pool Sanitizer to your pool PVC by following the installation process provided. Keep the bypass manifold attached to the head of the tank in the closed position so no water goes through the Low-Chlo tank.
2. Test your pool salinity. The target salinity is under 2000 ppm.
3. Drain your pool 2-3 feet and refill with fresh water and test again. If the salinity is still above 2000 ppm, dilute further.
4. Once the salinity is below 2000 ppm, open the bypass valve on the top of the Low-Chlo tank and start using the system.

## **Will My Current Pool Filter Work?**

Yes, the Low-Chlo Pool Sanitizer will work with all types of filters.

DE filters and Sand filters are the easiest as they are simply backwashed. De filters usually get backwashed once per month and Sand filters every other week.

Note: De filters should be opened and cleaned from the inside annually. We recommend closing the bypass on the top of the Low-Chlo tank prior to depressurizing your system by removing the DE filter tank lid. After cleaning the filter grids and inside the tank, reinstall the filter tank lid, run the system and purge any air out of the filter tank. Then add the appropriate amount of fresh DE powder. Once the system is back to normal operation, turn off the circulation pump and open the Low-Chlo tank bypass.

Cartridge filters also may allow debris to pass by as the filter is being removed from its tank. For this reason, we recommend closing the bypass on the top of the Low-Chlo tank just prior to depressurizing your system by removing the cartridge filter tank lid. After cleaning the filter cartridge and re-installing the filter tank lid, run the system and purge any air out of the filter tank. Once the system is back to normal operation, turn off the circulation pump and open the Low-Chlo tank bypass.

Note: Cartridge type filters usually begin to deteriorate after a year and most manufacturers recommend annual replacement.

11.

## **Trouble Shooting**

### **Problem: My pool water has a greenish hue color.**

Solution: 1- Check to make certain the Low-Chlo bypass valves are in the proper position.

2- Check the pH level. If the pH level is below 6.6 or higher than 8.6 it can cause the metallic media in the system to fall out of solution and give off a greenish tint or hue to the water, and or stain the pool surface. Correct the pH level and allow the system to run until water color corrects. Use some type of metal control to sequester the metals into the filter.

3- Make certain only one (1) chlorine tablet is placed in the skimmer or chlorinator. Using multiple tablets will affect the PH Level.

4- Nitrates and phosphates can turn the water green with any type of pool system. Have these levels checked and remedy accordingly if necessary.

### **Problem: The pool water appears cloudy.**

Solution: 1- Check to make certain the Low-Chlo bypass valves are in the proper position.

2- This may be an accumulation of dead bacteria that needs to be removed. Backwash or clean your filter system (replace cartridge if needed).

3- Make certain there is at least one (1) chlorine tablet in the skimmer or chlorinator.

4- Large amounts of rain, high bather load of people or animals, may cause a need for a rare treatment of chlorine shock. Close the Low-Chlo bypass valves and shock the pool with **LIQUID CHLORINE ONLY**. Allow the system to run 24 hours, or longer if needed. Clean the filter and open the Low-Chlo valves accordingly.

### **Problem: The pool system seems to have slowed or pressure has increased.**

Solution: 1- Check to make certain the Low-Chlo bypass valves are in the proper position.

2- Backwash or rinse the pool filter system.

3- The riser tube in the Low-Chlo media tank may have become clogged by debris that passed through the filter. Disconnect the unions between the media tank's bypass valve and the head of the tank and flush the tank (see page 5 for flushing instructions).

12.

### **Tips and recommendations:**

- ✓ Keep all pool toys and equipment, i.e. poles, nets, hoses, vacuums etc., in a sunny place where they will thoroughly dry prior to storing them away. Keeping them in a shaded place may cause algae/bacteria/ mold or mildew growth which could be introduced into the chemical free pool water.
- ✓ Keep only ONE to TWO (1-2) chlorine tablet(s) in the skimmer or chlorinator until it is reduced to half-dollar size then add another tablet to continue to oxygenate dead bacteria.
- ✓ Remove inflatables and toys after use as they could get slimy or grow algae from leaving them in a chemical free environment too long.
- ✓ Maintain the wall and floor surface by brushing them weekly or using an automatic suction style vacuum or robot.
- ✓ Rinse all garments worn in the ocean, a river, or a lake before wearing them into the pool. This will remove any bacteria.
- ✓ Monitor and maintain the pH level. The system operates best with pH levels of 7.2-7.8. The system will not perform properly outside this level.
- ✓ Make sure the pool filter is cleaned accordingly (rinse cartridges once per month and replace annually, open DE filters and clean from the inside annually).
- ✓ A rare shock treatment may be needed. Shock the pool after swimming activity and run the pool overnight or as long as needed to clear any issues **LIQUID CHLORINE ONLY**
- ✓ When transferring your pool from salt to fresh water it is not recommended to empty the pool as it may 'float' thereby causing great damage! Start with a 2-3-foot drain and test the salinity (repeat if needed). The target level is under 2000ppm.
- ✓ Always turn the pool pump off before working on any pool equipment or turning any valves.
- ✓ Always detach the system BEFORE winterizing the pool. Then place the system full of water where it will not freeze! **DO NOT DRAIN THE WATER FROM THE SYSTEM!**
- ✓ Environmental factors, leaves, pollen, etc. may affect phosphate levels in the pool. If possible trim back branches that extend over the pool and monitor your levels.
- ✓ Nitrates from fertilizers and plant and lawn growth enhancers may have run-off during watering or rain. Nitrates will cause pool water to turn green. Make certain potted plants and flower beds will not run off into the pool.

13.

## **Warranty**

### **5 YEAR LIMITED WARRANTY**

Low-Chlo, LLC warrants its Low-Chlo Pool Sanitizer media tank, tank head, and tank bypass assembly, to be free from defects in material or workmanship, under normal use and service for **five (5) years** and the PVC bypass assembly (retail models only) for **one (1) year**, from the date of the initial system installation on private, residential swimming pools within the USA.

Systems **MUST** be registered with the date of the initial system installation AND a picture of the installation must be uploaded to our warranty database. Systems not registered properly with Low-Chlo, LLC will only be covered at the discretion of Low-Chlo, LLC on a case-by-case basis.

For residential installations in USA: If a product is defective in workmanship or materials and is removed and returned within five (5) years for the tank and tank head accessories or one (1) year for the PVC bypass after the date of the initial system installation, Low-Chlo, LLC will, at its option, either repair or replace the defective product and return it freight paid. The Low-Chlo Pool Sanitizer is not intended for commercial use and no warranty is expressed or implied.

Please contact Low-Chlo, LLC for warranty service at [warranty@low-chlo.com](mailto:warranty@low-chlo.com)

Any labor costs incurred in removal and/or reinstallation of the product is NOT covered under this warranty. Low-Chlo, LLC reserves the right to examine any returned product prior to extending any warranty coverage. If the product is deemed covered by warranty all shipping is covered by Low-Chlo, LLC.

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### **Warranty exclusions:**

1. Material supplied, or workmanship performed by others in installation process.
2. Damage resulting from improper installation including installation on pools larger than the product rating.
3. Problems resulting from failure to operate the product(s) in accordance with the recommended instructions contained in product's owner's manual(s).
4. Problems resulting from failure to maintain pool water chemistry in accordance with the recommendations in the owner's manual(s).
5. Problems resulting from tampering, accident, abuse, negligence, unauthorized repairs or alternations, fire, flood, lightning, freezing, external water, degradation of natural stone used in or immediately adjacent to a pool or spa, war, or acts of God.

#### **DISCLAIMER:**

THE EXPRESS LIMITED WARRANTY ABOVE CONSTITUTES THE ENTIRE WARRANTY OF LOW-CHLO, LLC WITH RESPECT TO ITS POOL PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. IN NO EVENT SHALL LOW-CHLO, LLC BE RESPONSIBLE FOR ANY CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, DAMAGE TO OR LOSS OF EQUIPMENT, LOST PROFITS OR REVENUE, COSTS OF RENTING REPLACEMENTS, AND OTHER ADDITIONAL EXPENSES, EVEN IF THE SELLER HAD BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. NO WHOLESALER, AGENT, DEALER, CONTRACTOR, OR OTHER PERSON IS AUTHORIZED TO GIVE ANY WARRANTY ON BEHALF OF LOW-CHLO, LLC. THIS WARRANTY IS VOID IF THE PRODUCT HAS BEEN ALTERED IN ANY WAY AFTER LEAVING THE FACTORY.

### **Warranty Registration**

Please visit: <https://low-chlo.com/pages/low-chlo-warranty-registration> to register your Low-Chlo Pool Sanitizer. Or scan the following QR code:

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