



ACID FEED SYSTEM

Owner's Manual

Model: AQL-CHEM₄-ACID



IMPORTANT SAFETY INSTRUCTIONS

Basic safety precautions should always be followed, including the following: Failure to follow instructions can cause severe injury and/or death.

! This is the safety-alert symbol. When you see this symbol on your equipment or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

! **WARNING** warns about hazards that **could** cause serious personal injury, death or major property damage and if ignored presents a potential hazard.

! **CAUTION** warns about hazards that **will** or **can** cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.

The **NOTICE** label indicates special instructions that are important but not related to hazards.

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⚠ WARNING - Read and follow all instructions in this owner's manual and on the equipment. Failure to follow instructions can cause severe injury and/or death.

⚠ WARNING – Suction Entrapment Hazard.



Suction in suction outlets and/or suction outlet covers which are, damaged, broken, cracked, missing, or unsecured can cause severe injury and/or death due to the following entrapment hazards:



Hair Entrapment- Hair can become entangled in suction outlet cover.



Limb Entrapment- A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in a mechanical bind or swelling of the limb.



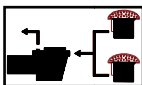
Body Suction Entrapment- A negative pressure applied to a large portion of the body or limbs can result in an entrapment.



Evisceration/ Disembowelment - A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is, damaged, broken, cracked, missing, or unsecured can result in evisceration/ disembowelment.

Mechanical Entrapment- There is potential for jewelry, swimsuit, hair decorations, finger, toe or knuckle to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

⚠ WARNING - To Reduce the risk of Entrapment Hazards:



- o When outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [1 meter] apart, as measured from near point to near point.
- o Dual suction fittings shall be placed in such locations and distances to avoid “dual blockage” by a user.
- o Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas.
- o The maximum system flow rate shall not exceed 6 ft/sec in the suction (outlet) lines.
- o Never use Pool or Spa if any suction outlet component is damaged, broken, cracked, missing, or not securely attached.
- o Replace damaged, broken, cracked, missing, or not securely attached suction outlet components immediately.
- o In addition two or more suction outlets per pump installed in accordance with latest ASME, APSP Standards and CPSC guidelines, follow all National, State, and Local codes applicable.
- o Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.

⚠ WARNING – Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in an increase potential for suction entrapment as described above.

⚠ WARNING – Failure to keep suction outlet components clear of debris, such as leaves, dirt, hair, paper and other material can result in an increase potential for suction entrapment as described above.

⚠ WARNING – Suction outlet components have a finite life, the cover/grate should be inspected frequently and replaced at least every ten years or if found to be damaged, broken, cracked, missing, or not securely attached.

⚠ CAUTION – Components such as the filtration system, pumps and heater must be positioned so as to prevent their being used as means of access to the pool by young children. To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times. Components such as the filtration system, pumps, and heaters must be positioned to prevent children from using them as a means of access to the pool.



⚠ WARNING – Hazardous Pressure. Pool and spa water circulation systems operate under hazardous pressure during start up, normal operation, and after pump shut off. Stand clear of circulation system equipment during pump start up. Failure to follow safety and operation instructions could result in violent separation of the pump housing and cover, and/or filter housing and clamp due to pressure in the system, which could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting system pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water) is discharged.



⚠ WARNING – Separation Hazard. Failure to follow safety and operation instructions could result in violent separation of pump and/or filter components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing pool and spa circulation system, filters manual air relief valve must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter manual air relief valve body is in locked position in filter upper body. **Never operate or test the circulation system at more than 50 PSI. Do not purge the system with compressed air.** Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.



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⚠ WARNING – Risk of Electric Shock. All electrical wiring **MUST** be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do **NOT** use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on any electrical equipment, turn off power supply to the equipment. To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent abuse from lawn mowers, hedge trimmers and other equipment. Do **NOT** ground to a gas supply line.

⚠ WARNING – Risk of Electric Shock Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard. Electrical ground all electrical equipment before connecting to electrical power supply.

⚠ WARNING – Risk of Electric Shock Failure to bond all electrical equipment to pool structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.

Notes to electrician: Use a solid copper conductor, size 8 or larger. Run a continuous wire from external bonding lug to reinforcing rod or mesh. Connect a No. 8 AWG (8.4 mm²) [No. 6 AWG (13.3 mm²) for Canada] solid copper bonding wire to the pressure wire connector provided on the electrical equipment and to all metal parts of swimming pool, spa, or hot tub, and metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub.

IMPORTANT - Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and other general wiring procedures.

⚠ WARNING – Risk of Electric Shock . The electrical equipment must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a 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 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 electrical equipment without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use this electrical equipment. Disconnect the electrical equipment and have the problem corrected by a qualified service representative before using.

⚠ CAUTION – HAYWARD® pumps are intended for use with permanently-installed pools and may be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently-installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it is capable of being readily disassembled for storage and reassembled to its original integrity.

⚠ WARNING – Risk of Hyperthermia. To avoid hyperthermia the following “Safety Rules for Hot Tubs” are recommended by the U.S. Consumer Product Safety Commission.

1. Spa or hot tub water temperatures should never exceed 104°F [40°C]. A temperature of 100°F [38°C] is considered safe for a healthy adult. Special caution is suggested for young children. Prolonged immersion in hot water can induce hyperthermia.
2. Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness, which could lead to unconsciousness and subsequently result in drowning.
3. Pregnant women beware! Soaking in water above 100°F [38°C] can cause fetal damage during the first three months of pregnancy (resulting in the birth of a brain-damaged or deformed child). Pregnant women should adhere to the 100°F [38°C] maximum rule.
4. Before entering the spa or hot tub, users should check the water temperature with an accurate thermometer; spa or hot tub thermostats may err in regulating water temperatures by as much as 4°F (2.2°C).
5. Persons taking medications, which induce drowsiness, such as tranquilizers, antihistamines or anti-coagulants, should not use spas or hot tubs.
6. If the pool/spa is used for therapy, it should be done with the advice of a physician. Always stir pool/ spa water before entering the pool/spa to mix in any hot surface layer of water that might exceed healthful temperature limits and cause injury. Do not tamper with controls, because scalding can result if safety controls are not in proper working order.
7. Persons with a medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain a physicians advice before using spas or hot tubs.
8. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6°F [37°C]. The symptoms of Hyperthermia include: drowsiness, lethargy, dizziness, fainting, and an increase in the internal temperature of the body.

The effects of Hyperthermia include:

1. Unawareness of impending danger.
2. Failure to perceive heat.
3. Failure to recognize the need to leave the spa.
4. Physical inability to exit the spa.
5. Fetal damage in pregnant women.
6. Unconsciousness resulting in danger of drowning.

SAVE THESE INSTRUCTIONS



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▲ DANGER Chemical Hazard: Mixing Chemicals or adding water to acid may result in explosion, fire and/or toxic gas release. To avoid death, serious injury or major property damage, do not mix Chlorine tablets with Calcium Hypochlorite, or with any other form of concentrated chlorine or other chemicals with Muriatic Acid.



▲ DANGER Chemical Hazard: Muriatic Acid (liquid and mist) can cause severe burns, may be fatal if swallowed or inhaled. Inhalation can cause severe lung damage. To avoid death or serious injury:

- Wear eye and skin protection while maintaining or servicing this unit.
- If inhaled move to area of fresh air and seek medical attention immediately.
- If swallowed contact local poison center or physician immediately. Give large amounts of milk or water.
- Wear chemical resistant clothing including chemically resistant gloves. If Skin contact occurs, wash with soap and water for at least 20 minutes. Remove contaminated clothing and shoes. Contaminated clothing should be cleaned before reuse.
- Use splash resistant safety goggles. If eye contact occurs, seek immediate medical attention. Flush eyes immediately with clean clear water for at least 20 minutes.
- Use in well ventilated area only.



▲ WARNING-Hazardous waste: Muriatic acid can cause corrosion, which can cause injury or property damage. To avoid, dispose of used acid at an approved hazardous waste facility. Call your local fire department or hazardous materials team for significant spills.

Installation:

This ACID Feed System is designed to be used with a controller such as the Hayward AquaPlus® or AquaRite® Pro or CAT Controllers®. It should be located within 10 feet of the 110 VAC signal supply and within 12 feet of the location on the return to pool piping. Included in the package is a check valve which **MUST** be installed on the return to pool line, downstream of all filters, heaters, and other equipment.

To install the check valve:

1. Shut off the pool system pump. Allow the water to drain from the return to pool line. (If this is a flooded suction application, the location for the tapped hole must be isolated with valving or you will get wet.)
2. Locate the desired spot for the acid feed line on the return to pool line.
3. Drill a 27/64" hole and tap with a 1/4"-18 NPT. Do not oversize the hole, or run the tap too deep.
4. Facing the threaded end of the fitting, begin wrapping the Tetrafluoroethylene (TFE) tape in a clockwise direction, starting on the second thread nearest the fitting end. Overlap each wrap by one-half the width of the TFE tape.
5. Carefully screw the check valve into the pipe, hand tight plus 1/2 turn maximum.

Run the 6mm tubing (13 feet of tubing is included) from the discharge of the pump to the check valve. Both ends are compression fittings. Loosen the nuts at each end. Slide the nuts over the tubing. Install the tubing over the short male nipple at each end. Firmly hand tighten the nuts.

Plug the 110 VAC cord into the controller. As long as there is power, the pump will run.

The ACID feed system should NOT to be stored in the same room as other chemicals or chemical tanks.

NOTICE: If the installation is in a spa utilizing a CAT Controllers, the feed tube marked 9900106234 may be useful as it has a capacity of 6.14 GPD. With all other Controllers please be aware this Feed Tube may not function correctly.



OPERATION:

The Muriatic acid is stored in the 15 gallon storage tank below the pump. **DO NOT OVER FILL** as the tank only holds 15 gallons. The Muriatic acid is pumped from the tank utilizing a 3/8" pick up tube to the pump, through the small tube, and then to the Return to Pool Line.

This system is designed for:

- Muriatic Acid (HCl)

Hayward recommends dilution rates of:

- 1 gallon of Muriatic acid to 3 gallons of water with Pools
- 1 gallon of Muriatic acid to 5 gallons of water with Spas

▲ DANGER Chemical Hazard: Adding water to acid may result in explosion, and/or excessive heating which may cause death, serious injury or major property damage. To avoid ALWAYS ADD ACID TO WATER NOT WATER TO ACID.

REPLACING THE FEED TUBE:

The Santoprene feed tube should be replaced every 3 to 6 months

1. Disconnect the pump from the power supply.
2. Remove the faceplate. (Note: the bearing [transaxle] will be seated in front of the roller. Gently pull the faceplate and the bearing assembly until it is unseated. **Be careful not to lose the bearing assembly, attached to the back of the faceplate, or the screws.**)
3. Turn the roll holder clockwise, so that the bottom roller is equally spaced between the intake and discharge fittings.

▲ DANGER Chemical Hazard: Muriatic Acid (liquid and mist) can cause burns, may be fatal if swallowed or inhaled. Inhalation can cause lung damage.

To avoid death or serious injury:

- Wear eye and skin protection while maintaining or servicing this unit.
 - Wear compatible rubber gloves.
 - Use in a well ventilated area.
4. Unscrew the compression nuts over the blue tubing and remove the tubing from the feed tube fittings.
 5. Lift and remove the feed tube fitting on the lower left side (inlet) of the pump from its seat by sliding it away from the tank. Lift and remove the feed tube fitting on the lower right side (outlet) of the pump from its seat by sliding it away from the tank.
 6. Manually rotate the roller clockwise, while lifting the feed tube, until the feed tube comes away from the pump.

To install a new feed tube:

1. Manually rotate the roller clockwise until the rollers are at the 3 o'clock and 9 o'clock positions.
2. Insert the curved side of the new feed tube into its seat on the left side of the pump.
3. Manually rotate the roller clockwise while pushing on the feed tube until the right side of the feed tube is easily inserted into its seat. (Curved side first.)
4. Re-install the faceplate, starting at the top and pressing the bearing into the countersink on the roller assembly. Install the two screws.
5. Unscrew the compression nut on the feed tube left side (inlet). Slide the nut over the 6" long blue tubing going to the pickup tube. Install the tubing over the male compression portion of the feed tube fitting. Firmly hand tighten the nut.
6. Unscrew the compression nut on the feed tube right side (outlet). Slide the nut over the long blue tubing going to the return to pool check valve. Install the tubing over the male compression portion of the feed tube fitting. Firmly hand tighten the nut.

SPARE PARTS:

Tank Cap CLX-LFCAP



Check Valve CAX-3511



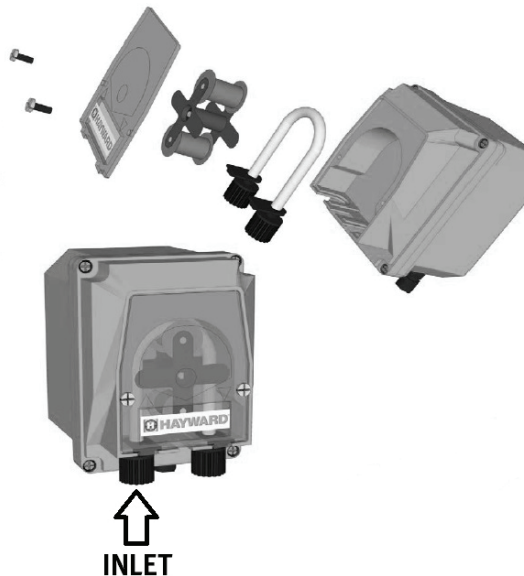
Feed Tube
CLX-3512
or
CLX-3508



Pick Up Tube
Assy
GLX-LFTUBE



PUMP – ACX03590120



PART NUMBER	DESCRIPTION	NO. REQ'D
ACX03590120	PUMP ASSEMBLY WITH 13' TUBING AND 31.68 GPD SPARE FEED TUBE	1
CAX-3504	PVC BLUE SUCTION TUBE(SOFT) (13 FT ROLL)	
CAX-3505	PVC BLUE SUCTION TUBE(SOFT) (300 FT ROLL)	
CAX-3508	3X7 SANTOPRENE FEED TUBE 6.14GPD	
CAX-3509	ROLLER ASSEMBLY for 31.68 GPD	
CAX-3511	NEXT GEN. PP 1/4" INJECTION CHECK VALVE	
CAX-3512	3X7 SANTOPRENE FEED TUBE-31.68GPD (Standard)	1
CAX-3513	CLEAR FRONT HAYWARD COVER LENS FOR THE PUMP	
CAX-3514	SECONDARY CATCH BASIN	
GLX-LFCAP	BLUE TANK CAP 100mm	1
GLX-LFTUBE	PICK UP TUBE ASSEMBLY WITH FITTING, SEAL RING and INLET FILTER	1
GLX-LFCOVER	COVER, Rain Shield	1
GLX-LFTANK	15 GALLON TANK WITH PUMP MOUNTING BRACKET	



Controller Interface:

To protect the pool, the AquaRite Pro and the Pro Logic controller will automatically shut down pH control and display a "Check System" message if the **AQL-CHEM4-ACID** dispensing device runs continuously for more than the selected timeout value. This prevents a situation where the AquaRite Pro or the Pro Logic controller is constantly feeding pH reducer (Muriatic acid) because of a probe error or external problem with the pool. This allows the pool or spa owner to evaluate the pool chemistry before continuing with pH control.

Winterization -

1. Remove pump pickup tube from tank.
2. Insert pickup tube into 5 gallon bucket of water.
3. Run pump to flush water and acid out of the feed lines and into the pool.
4. Use the 5 gallon bucket of water and allow the pump to feed until the bucket is empty. Continue to run the pump for a period of 10-15 minutes after the bucket is empty. This will run the lines dry by forcing air through them.
5. Backwash the pickup tube and filter. (This cleans the filter)
6. Drain and reinstall pickup tube or secure to side of tank.

Hydrochloric/Muriatic acid can be stored outside or inside a secure and ventilated area/location for the winter.

Typical Pool Hydrochloric/Muriatic acid has a freezing point of -15° F or -26° C.

Typical Pool Hydrochloric/Muriatic acid has a boiling point of 220° F or 93° C.

If disposal of Hydrochloric/Muriatic Acid is required from tank please contact your local environmental protection agency for instructions.

If disposal of Hydrochloric/Muriatic Acid is required from tank please follow the steps below carefully:

▲ DANGER Chemical Hazard: Muriatic Acid and Chlorine (liquid and mist) can cause severe burns, may be fatal if swallowed or inhaled. Inhalation can cause server lung damage.

1. Protect yourself. Concentrated solutions can be very corrosive and a concentrated batch will released dangerous hydrogen chloride vapor. Wear safety glasses and gloves. Find an area with good ventilation before dealing with the acid. Cover your arms and legs with a lab coat or any protective long-sleeved clothes if dealing with concentrated solution.
2. Prepare a base mix to negate acidity. Mix a 1 lb. box of sodium bicarbonate (baking soda) with lots of water. Leave some of the sodium visible at the bottom. Slowly add in the acid. Wait for the reaction, most likely fizzing, to stop. Add in more sodium carbonate if the acid still fizzes.
3. Pour the acid. Tiny amounts of diluted hydrochloric/muriatic acid can be flushed down the sink with large quantities of water. Local law may forbid even this. According to some local environmental protection agencies, you cannot dispose of it down the drain or in the trash unless it's neutralized. Contact your local officials to verify what is allowable in your state.
4. Transport acid to a waste management plant. The facilities often use hydrochloric acid. Phone your local waste management center to see if they can carry it.

HAYWARD® Pool Products Limited Warranty

To original purchasers of this equipment, Hayward Pool Products, Inc. warrants its liquid chemical feed systems (excluding the Santoprene Feed Tube) to be free from defects in materials and workmanship for a period of ONE (1) year from the date of purchase, when used in single family residential applications.

The limited warranty excludes damage from freezing, negligence, improper installation, improper use or care or any Acts of God. Parts that fail or become defective during the warranty period shall be repaired or replaced, at our option, within 90 days of the receipt of defective product, barring unforeseen delays, without charge.

Proof of purchase is required for warranty service. In the event proof of purchase is not available, the manufacturing date of the product will be the sole determination of the purchase date.

To obtain warranty service, please contact the place of purchase or the nearest Hayward Authorized Service Center. For assistance on your nearest Hayward Authorized Service Center please visit us at www.hayward.com.

Hayward shall not be responsible for cartage, removal, repair or installation labor or any other such costs incurred in obtaining warranty replacements or repair.

The Hayward Pool products warranty does not apply to components manufactured by others. For such products, the warranty established by the respective manufacturer will apply.

The express limited warranty above constitutes the entire warranty of Hayward Pool Products 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. In no event shall Hayward Pool products be responsible for any consequential, special or incidental damages of any nature.

Some states do not allow a limitation on how long an implied warranty lasts, or the exclusion of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

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*Supersedes all previous publications.

