

Poolsmith® Organic pH™ Installation Instructions

General Information

Important Notices: The InpHuser® injector and the pressure sensor fitting are designed to fit most swimming pool pumps with industry-standard ¼-18 NPSM Straight pipe drain plugs. This includes pumps manufactured by:

Pentair

PacFab

Sta-Rite

Hayward

Due to Federal regulations, **CO₂ cylinders are shipped empty.**

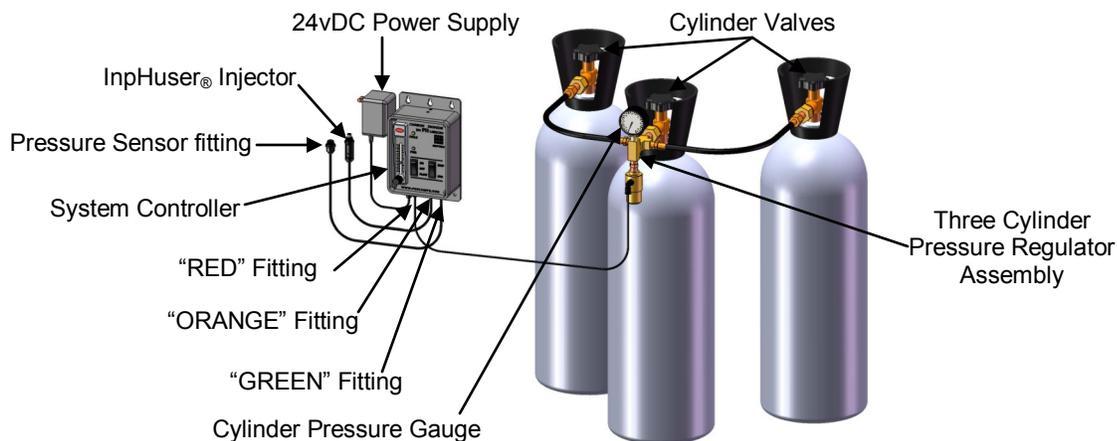
System Package Contents

- 1 - Low-voltage system controller with Carbon Dioxide InpHusion™ Chart and Instructions
- 1 - InpHuser® injector (patent pending)
- 1 - Pressure-sensor fitting
- 1 - Pressure regulator assembly with cylinder pressure gauge
- 1 - Package containing plastic washers for regulator assembly
- 30' - Poly-urethane tubing
- 2 - Packages cylinder restraint chain
- 1 - Bottle leak detector
- 1 - 24vDC low-voltage power adapter

Tools Required

- 1. Screwdriver
- 2. Drill
- 3. 1 1/8" Adjustable Wrench

Three Cylinder System Overview



Installation Instructions

1. Select a site to mount the system Controller within 5' of a **covered, weather-protected**, standard house voltage (110vAC), GFCI electrical outlet.
2. Securely mount the Poolsmith® low-voltage Controller with appropriate screws. (wood, masonry, etc.)
3. Install the InpHuser® injector and connect the poly-urethane tubing.

Important Notice: If the pump is located below the surface of the pool, assure that plumbing valves are positioned properly to prevent excess water pressure on pump before removing the drain plugs.

- a. Remove the drain plug from the pump strainer housing drain port. **Retain the plug for future use or for winterizing your pump at the end of the swimming season.**
- b. Securely install the InpHuser® injector in the open drain port. Install by hand. Do NOT over-tighten. Do NOT use Teflon tape or caulk.
- c. Cut a length of 5/32" poly-urethane tubing sufficient to span the desired route from the InpHuser® to the Controller.
- d. Insert one end of the tubing into the "BLUE" fitting at the end of the InpHuser® injector and route the tubing to the Controller. (See *Illustration above.*)

NOTE: To **connect** the 5/32" poly-urethane tubing into any of the fittings, push the tubing firmly into the fitting then gently tug on the tubing to assure it is properly seated in the fitting.

To **disconnect** the tubing from any of the fittings, depress the outer plastic ring and pull firmly on the tubing until it releases.

- e. Insert the opposite end of the tubing into the "ORANGE" fitting on the bottom of the Controller. (See illustration on next page.)
4. Install the pressure-sensor fitting and connect the poly-urethane tubing.
 - a. Remove the drain plug from the pump impeller housing drain port. **Retain the plug for future use or for winterizing your pump at the end of the swimming season.**
 - b. Install the pressure-sensor fitting in the open drain port. Using a small wrench, tighten the pressure-sensor firmly. Do NOT over-tighten. Do NOT use Teflon tape or caulk.
 - c. Cut a length of poly-urethane tubing sufficient to match the route of the tubing from the InpHuser® injector to the Controller.
 - d. Insert one end of the poly-urethane tubing into the "quick-connect" fitting of the pressure-sensor fitting.
 - e. Insert the opposite end of the tubing into the "GREEN" fitting on the bottom of the Controller.

IMPORTANT NOTE: To reduce the risk of damage, do not allow the tubing to contact the ground. Route tubing from the pressure-sensor fitting and the InpHuser® injector "upward" to any point above the pump using nylon wire ties to secure the tubing on its route to the Controller.

5. Secure the carbon dioxide (CO₂) cylinders.

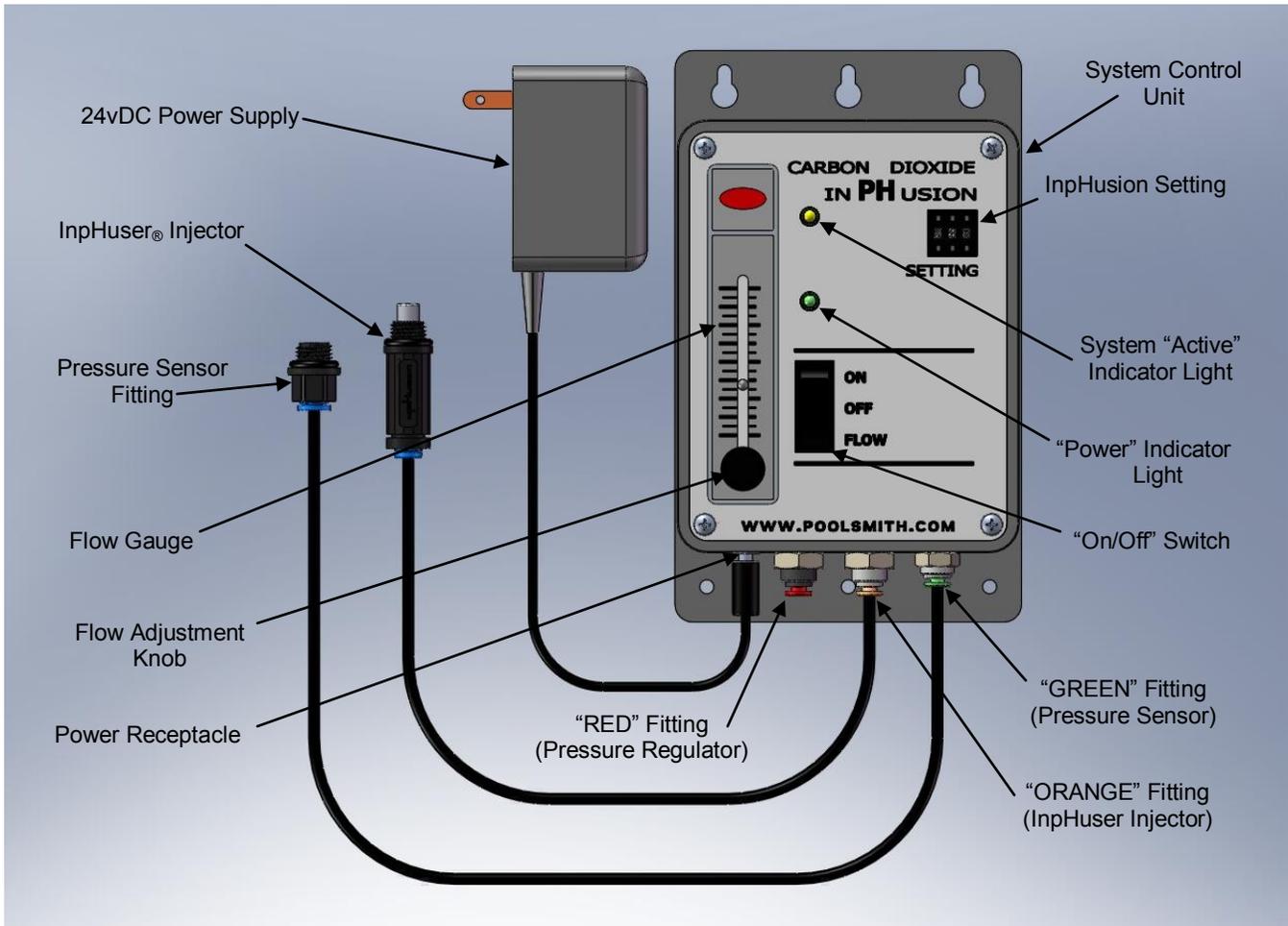
Warning: Using and transporting compressed gases can be dangerous if mishandled. Although carbon dioxide is non-flammable, it is stored at very high pressures. Damage to the top of the cylinder may result in high-pressure gas being released under tremendous energy. To prevent injury or damage caused by accidental toppling, cylinders must be secured to a wall or other stable object.

 - a. Place the cylinders on a solid level base and against a wall or other stable object such as a wooden or metal post anchored securely in the ground.
 - b. Fasten each end of the cylinder restraint chain to the wall or post with appropriate screws so the chain drapes around the cylinders above the midline.
 - c. Open one link of the chain to create a hook to facilitate easy replacement of the cylinders.
6. Mount the pressure regulator assembly to the cylinders and connect the tubing.
 - a. Insert a plastic "washer" (included) between each hexagonal nut fitting (CGA-320) on the regulator assembly and the threaded fitting on the cylinder valves.
 - b. While holding the pressure regulator with the gauge upright, firmly attach the nut collar to the cylinder valve with a 1 1/8" adjustable wrench. (DO NOT USE PLIERS.)
 - c. Firmly attach the regulator hose fitting to any additional cylinders with a 1 1/8" wrench.

NOTE: The plastic "washer" is squeezed between the threaded fitting on the cylinder valve and the regulator (CGA-320) fitting when the nut collar is tightened thereby creating a leak-proof seal. **If the seal is not made properly, CO₂ will escape at the faulty connection. DO NOT over tighten the nut. It should only be tight enough to prevent CO₂ leakage.** Plastic "washers" should be replaced every 2 or 3 cylinder exchanges.

- d. Cut a length of tubing sufficient to connect the pressure regulator assembly to the Controller.
- e. Insert one end of the tubing into the fitting located on the pressure regulator.
- f. Insert the opposite end of the tubing into the "RED" fitting on the bottom of the Controller.
7. Leak test the pressure regulator assembly.
 - a. Assure regulator fittings are securely attached to the cylinder valves.
 - b. Assure the poly-urethane tubing from the regulator to the Controller is securely attached.
 - c. Open the main valves on the cylinders by turning the valves counter-clockwise until they are completely open then turn them clockwise ½ turn.
 - d. Use the Poolsmith® "Leak Detector" or spray soapy water on all pressure regulator fittings including the tubing fitting on the regulator and the "RED" fitting on the controller. Leaks will appear as small but enlarging bubbles.
 - e. Using a cloth, wipe the leak detector residue from all surfaces.
8. Start the pump and check for water leaks at the pressure sensor fitting.
 - a. If a water leak appears, gently tighten the fitting until leak stops.

Poolsmith® Organic pH™ System Operating Instructions



Important Notice: The Organic pH system controller is programmed with a proprietary injection formula. The formula is based on pool volume and pump run time. In most cases, setting the Controller according to the InpHusion™ Chart will produce a pH range of 7.4 – 7.6. This result, however, may be dependent upon a Total Alkalinity (TA) level of <160. PLEASE NOTE — While the patented Carbon Dioxide InpHusion™ process will continue to reduce and stabilize pH, efficiency may be reduced if TA is greater than 160.

1. Using the InpHusion™ Chart, locate your pool's "Volume (Gallons)" in the left column. Reading across to the right, identify the "Flow Rate" in column 2, the "InpHusion Setting" in column 3, and the "Pump Run Time" on the far right.

NOTE: "Minimum" Pump Run Time indicated on the Chart is the minimum time the pump must operate to assure the necessary amount of CO₂ will be injected. If the pump is scheduled to run for less than the minimum time indicated on the Chart, results may be adversely affected.

NOTE: If the volume of your pool falls between those on the Chart, round up to the next level. Keep in mind, the Controller is designed to be extremely adjustable. If the settings listed on the Chart for your pool volume do not achieve your objectives, we recommend changing the "InpHusion Setting" first. Unless otherwise instructed by Poolsmith™, the "Flow Rate" should not exceed 5CFH.

2. Assure that your pump run time meets the minimum run time listed on the Chart.
3. Set the "InpHusion Setting" according to the Chart.

NOTE: Press the small button above each number to increase the number. Press the small button below each number to decrease the number.

4. Set the "Flow Rate" according to the Chart.
 - a. Start the pump.

NOTE: *The Organic pH system is designed to operate ONLY when the pump is generating pressure.*

- b. With the "FLOW" switch depressed, adjust the CO₂ flow rate to the rate indicated in the Chart. Turn the "Flow Rate Adjustment Knob" **counter-clockwise to increase** the flow rate or **clockwise to decrease** the flow. The small silver ball in the flow gauge will rise for increased flow or lower for decreased flow. **Do NOT** adjust the flow rate above 5CFH without specific instructions from Poolsmith Technical Support.
5. Release the "FLOW" switch and press the "ON" switch to start the system.
6. Turn off the pump. The Poolsmith® system will begin adjusting the pH when the pump begins its next normal operating cycle.

NOTE: *The system will reset each time the pump starts. If the pump is scheduled to operate 24 hours without stopping, the system will **not** reset. The pump **must** be scheduled to stop, at least momentarily, every 24 hours.*

Cylinder Exchange Instructions

1. Turn the Controller to the "OFF" position.
2. Close the cylinder valves. (Turn the knob clockwise until completely closed.)
3. Disconnect the regulator assembly from the cylinders using the 1 1/8" adjustable wrench. **DO NOT** misplace the plastic washers.
4. Exchange the cylinders.
5. Connect the regulator assembly to the cylinders. Make sure the plastic "washers" are in place. **NOTE:** *The plastic "washers" should be replaced every 2 or 3 cylinder exchanges.*
6. Tighten the hexagonal nut collar to the cylinder valves with the 1 1/8" adjustable wrench.
7. Open the cylinder valves.
8. Check for leaks.
9. Do a manual injection to check "Flow Rate".
 - Start the pump.
 - Press the "FLOW" button.
 - Check the "Flow Rate" as indicated by the silver ball in the flow gauge.
 - Turn the "Flow Rate Adjustment Knob" until the ball reaches the top of the gauge then turn it back until the ball indicates the desired "Flow Rate".
 - Release the "FLOW" button.
 - Stop the pump.
10. Turn the Controller to the "ON" position.

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