

HCF SYSTEM SPECIFICATIONS

High Capacity Feed Chlorination System for Commercial Swimming Pools

*Link Automation*TM
Water Products
Bringing industrial control technology to the pool and spa industry

I: General Description

- A. The equipment described herein shall be produced by a manufacturer regularly engaged in the manufacturing of Water Quality Control Systems for at least 25 years.
- B. The HCF System is for use with Sodium Hypochlorite or Calcium Hypochlorite for Sanitizer Feed and either Acid feed, or Carbon Dioxide (Co2) Feed for pH Control.
- C. The Purpose of HCF is to properly sanitize, lower chloramines, and improve water quality in demanding and dynamic swimming pool water, by maintaining an improved ORP/pH for a PPM residual consisting of a predominant HOCL%.

II: Operation Details:

- A. Controller will monitor Pool Parameters continuously.
- B. When setpoints are in need of correction, Controller will activate the appropriate feeder.
- C. The feeder will inject, mix, and dose HOCL/pH adjustment chemical instantly via an Vacuum Eductor (Liquid/Gas Sanitizer/pH control Feeds), a Static Mixer (Tablet Sanitizer), or a combination of the two (CO2 pH Feed).
- D. The controller will precisely maintain feeds to uphold a maximum deviation from setpoint as described by the controller Specs.
- E. When setpoint(s) are reached, the controller will stop the corresponding feeder(s).
- F. OPTIONAL: When Alarm setpoints are reached, operators can be emailed these alarms to report to their PC, Tablet, or Smartphone
- G. OPTIONAL: Operators can remotely connect to the controller by way of PC, Tablet, or smartphone.

III: ORP/pH Controller:

- A. The HCF System's Controller will have proprietary programming of parameters set by the Manufacturer.
- B. System Programming is based on Time Based Proportional Feed, with True PPM, or ORP Control, as the Basis for controlling Chlorine residuals. On/Off Control, and Set Point Control is excluded from this specification.
- C. The HCF System will have (as an option) the ability to be connected to remotely via Ethernet connection, or by Wireless connection (broadband connection with VPN Access will be provided by the end user). This is to allow remote support by the operator, the Service Company, and/or the Manufacturer.

IV: Sensors

The controller shall be capable of controlling sensors for the measurement and control of the water system. The controller shall have the ability to calibrate all sensor inputs. The controller shall be capable of measuring using the following sensors:

1. True PPM: (1 isolated input), The sensor range shall be 0 to 10ppm with a 0.000 ppm resolution
2. ORP: (1 isolated input), the sensor range shall be 0 to 999 mV with a 0.000 mV resolution.
3. pH: (1 isolated input), the sensor range shall be 4.0 to 10.0 with a 0.001 resolution.
4. Flow Switch: (1 input), the sensor shall detect an open or closed condition.
5. Temperature: (1 input), the sensor range shall be 60 to 120 degrees Fahrenheit with a 0.00 degree resolution.

V: Chemical Feed Equipment

- A. The HCF System shall be capable of providing a feed rate of 7.6ppm Chlorine within 1 hour for the Pool it is designed for: The following formula is provided as a reference:

$$\text{GPD (Gallons Per day)(Sodium Hypochlorite)} = ((10.7 \times (\text{Pool Gallons} / 10,000) \times 7.6) / 128) \times 24$$

OR

$$\text{GPD (Pounds Per day)(Calcium Hypochlorite)} = ((2 \times (\text{Pool Gallons} / 10,000) \times 7.6) / 16) \times 24$$

- B. Chlorine/Acid Feed Equipment must be NSF50 Listed.
- C. Sodium Hypochlorite/Acid/CO2 Feeds must be introduced by means of a venturi
- D. Calcium Hypochlorite Feed is to be done via a Tablet Chlorinator with a Static Mixer
- E. All Feed systems incorporated with the HCF System will contain the following parts: a flow meter with rate control valve, a solenoid valve for use with an ORP/pH Controller, and a Booster Pump.
- F. HCF-ECON Models shall incorporate technologies that will promote High Capacity Dosing, and Dynamic Mixing of Chemicals to drive the correct reactions instantaneously.

VI: Feeder Sizing:

- A. Based on the Formula in Section IV-A, The Maximum Pool Sizes for each HCF-FEED units are:
- HCF-FEED1: 1,133,300 Gallons
 - HCF-FEED2: 1,133,300 Gallons
 - HCF-FEED3: 129,070 Gallons
 - HCF-FEED4: 129,070 Gallons
 - HCF-FEED5: 1,133,300 Gallons

- HCF-FEED6: 258,140 Gallons
- HCF-FEED7: 2,266,600 Gallons

HCFTAB Series Sizing is as Follows:

- HCFTAB-(101, 105, 109, 1001, 1005, 1009): 45,345 Gallons
- HCFTAB-(102, 106, 110, 1002, 1006, 1010): 165,182 Gallons
- HCFTAB-(103, 107, 111, 1003, 1007, 1011): 356,275Gallons
- HCFTAB-(104, 108, 112, 1004, 1008, 1012): 589,473 Gallons

HCF-ECON Series are for pools less than 111,493 gallons who wish to use conventional pumps.

B. Future models for Larger Size Pools will be available as the need exists.

VII: Performance

- A. HCF System use will reduce chloramines, thus reducing or eliminating the need to super chlorinate the pool.
- B. HCF System will maintain True PPM Levels of no more than 0.1 ppm of setpoint
- C. HCF System will maintain ORP Levels of no more than 2mV of set point (ORP Control).
- D. As pH dictates the ability for a controller to maintain a consistent residual, it is important that the pH feed be capable of maintaining a steady pH throughout any demand. HCF pH controls should not deviate more than 0.1 from set point at any given time.

VIII: Installation

- A. HCF System plumbing for installation will be either 1.5", or 2" SCH80 PVC pipe and fittings (Depending on the configuration)
- B. All HCF Systems require a Booster Pump to provide consistent flow to the HCF Manifold (HCFTAB systems require Booster Pumps for the Tablet Chlorinator, and for any venturi feeder it is packaged with). The Venturi Eductors and the Controller Flow cell are fed via the supplied booster pump.
- C. Booster Pump requirements: All HCF Feed systems include a supplied Booster Pump to supply the correct flow/pressure into the venturi(s); for liquid chemical feeds, a Booster Pump rated for 19GPM or more water flow, at 30psi is required; for systems with CO2 included, a Booster Pump Rated for 60gpm or better at 30psi is required. 120/230 Volt Motor, Single phase is recommended; Plastic Pump Body and Impeller is recommended for swimming pool use.
- D. Incoming flow to the booster pump must come from post Filter supply, and chemically treated water will return to a point in the return line after the heat exchanger, and any other equipment that cannot have chemically treated water pass through it.

- E. The booster pump Loop will incorporate a bypass to and from the HCF Manifold. The Bypass valve enables the control of flow and pressure to the manifold.
- F. All plumbing will be properly supported to prevent damage to the installation.

- G. In HCFTAB Installations, the Supplied Tablet Chlorinator will require the following Inlet/Outlet Plumbing:
 - Model Powerbase 3010/3070 AT: 1.5" pipe In/2" Outlet
 - Model Powerbase 3140 AT: 2" Pipe In/2" Outlet
 - Model Powerbase 3500: 3" Pipe In/2" Outlet

IX: Warranty

- A. HCF Series 100, 1000, ECON Systems: Controller: five (5) years – Electronics; Sensors: two (2) years prorated; Chemical Feeders: One (1) year Parts Replacement.
- B. HCF-FEED Series: Chemical Feeders: One (1) year Parts Replacement
- C. This warranty extends to the original retail owner only, beginning on the date of installation, and is not enforceable by any other party. Proof of purchase and/or date of installation will be required to execute a warranty claim.
- D. **Warranties by Others:** Some products incorporate components manufactured by other manufacturers. Some of these provide warranties in addition to the warranty provided herein. In all such cases, a copy of that warranty will be provided with the product. To the extent protection provided under any such third party warranty exceeds the Limited Warranty provided herein, the Customer will have to look to that manufacturer for the additional warranty protection.

X: More Information

- A. Please contact Link Automation at 201-236-1720, or send your comments and concerns to linkauto@linkautomation.com