



Blue-White®

Ensuring Optimal Water Sanitation in Swimming Pools and Water Attractions

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Whether it's a public swimming pool or a large water park attraction, optimum water chemistry requires balancing disinfection, user comfort, and proper maintenance to ensure the water is safe, aesthetically appealing, and properly maintained. Achieving this balance requires a big picture understanding of why chemicals are added, and just as importantly, choosing high quality, reliable equipment to assist you in achieving perfect chemistry.

The Importance of Water Chemistry

Water wants to be dirty, and in fact, it's a dangerous misconception that clear water is clean water; plenty of microorganisms produce no color or odor and can thrive if disinfectants are not circulating in the system at the intended rate. Without human intervention, bacteria, algae, and other microorganisms will grow unabated.

Health and safety are the primary goals of correct water chemistry. Beyond that, aquatics managers must ensure swimmer comfort by minimizing skin and eye irritants, unpleasant colors, and the strong chemical smell caused by chloramines.

Chemicals that are typically used to manage these issues include:

Chlorine. Is the proven chemical in aquatics applications and acts as a sanitizer and oxidizer, killing harmful microorganisms like bacteria, algae, and viruses to maintain a safe, sanitary, and sensory appealing swimming environment.

Acid (hydrochloric/muriatic acid). These chemicals are used to manage pH balance. If the pH is too high, the water becomes very irritating to the skin, eyes, and lungs. Should problems occur such as bacterial or algal overgrowth,

larger concentrations of acid can be used to "shock" the pool and get things back under control.

Cyanuric acid (CYA). Primarily for outdoor aquatics, CYA stabilizes chlorine against UV rays, which otherwise break down chlorine too quickly.

Bromine. An alternative disinfectant, bromine, is often used in indoor pools or dark environments where its higher atomic weight lets it last longer than chlorine.

Alkalinity and hardness adjusters. These chemicals are monitored and added to prevent corrosion or scaling in the equipment, which can lead to costly damage and failures.

The Importance of Investing in the Right Equipment

To save on initial costs, aquatics facilities will sometimes choose more inexpensive chemical

metering equipment. However, if the equipment falls short on performance, it can be difficult to maintain optimal chemistry. It makes more sense to invest in, and begin with a highly accurate and dependable Chemical Feed Pump to meter precise amounts of pool chemical in order to achieve and maintain balanced chemistry. This will save both frustration and extra maintenance, while also keeping the water safe and inviting.

Metering Pumps which are used to inject Chlorine must be able to handle the off-gassing nature of the chemical, to prevent vapor lock and clogging. Peristaltic Pumps are the ideal pump choice because they have no valves to clog and are not subject to vapor lock. However, if a diaphragm pump is preferred it is an option to use degassing valves. Pumps used to meter acids must be built for chemical compatibility to withstand corrosive chemical attacks, and



Blue-White® FLEXFLO® A1A Chemical Feed Pump & F-300 Flow Meter.

again, Peristaltic Pumps are an excellent choice because the fluid being pumped does not come into contact with the pump itself, only the pump tube comes in contact with the fluid being metered.

High-quality pumps can provide a host of valuable features, such as broad feed capability and adjustable motor speed, which add flexibility when needed for environmental factors like heavy rain, extreme heat, and high bather loads. While lower-cost pumps may work for the short term, they often lack the flexibility and adjustability necessary to handle these common issues faced by public pools and water attractions

The effects of poor pool chemistry can result in water that takes on color or odors, thus turning away swimmers or causing illness. When the failure is serious it may result in regulatory penalties and facilities being forced to close.

Owners/Operators may then need to invest extra time, money, and chemicals to restore proper balance. In the long run, investing in reliable equipment from the start can reduce both the cost of corrective maintenance and overall operating expense.

Other aspects of pool Sanitation include the filtration system. Flow meters installed in-line after the filtration system allow operators to visually verify that the recirculating pump is pushing enough water through the filtration system to ensure adequate water turnover (Figure 1).

Correct Pump Sizing Matters

Of course, it isn't enough to have high-quality equipment; chemical feed pumps and other equipment must be correctly sized. Determining the correct pump size requires specific mathematical calculations that take into account the pool's volume of water and factors such as whether it is indoors or outdoors, the average standing water temperature and usage. The overall climate also matters, as a pool in Florida will have different chemical demands than one in Michigan due to such environmental factors as humidity, rain, and amount of sunlight.

Once the Chemical Feed Pump has been properly sized, managers must then consider its feed range and turndown ratio. Pumps with a narrow feed range are likely to be overused or forced to run at their maximum speed for a longer period than is recommended. This can lead to frequent tube or diaphragm replacements, increased maintenance costs and possible shortening

of the service life of the unit. A correctly sized metering pump that offers a broad feed range and good turndown ratio won't have to work so hard, and it can be dialed up to shock the pool as needed.

The best way to ensure equipment can provide reliable and consistent chemical feed in an aquatics system is to work with a dependable manufacturer or distributor. The right vendor can provide components that are functionally, electronically, and chemically compatible, mitigating the risk of an ineffective system.

F-300 & A1A INSTALLATION EXAMPLE

1. Strainer
2. Circulation Pump
3. Filter
4. Heater
5. Check Valve
6. Flowmeter: Blue-White® F-300
7. Injector: Blue-White® A1A
8. Solution Tank
9. Injection Fitting
10. Return Line

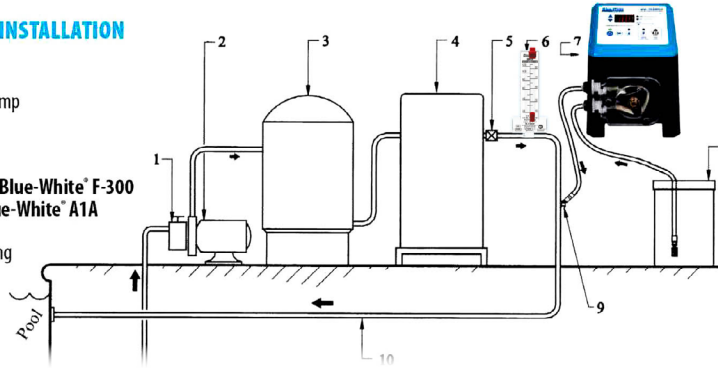


Figure 1. Ensuring proper turnover: This diagram highlights the placement of the flowmeter and injection fitting (9) necessary for verifying disinfectant delivery.