

Sand Filter (Model PS Control Panel)

Manufacturer: SJE Rhombus

Model:

- Pro 12-299A (115 V);
- PS1W114X (115/208/230 V)

Phase: Single

Number of Pumps: 2

Float Tree(s) Required: One 2-Float Tree Timer; One PS Float Tree

Electrical Schematic Available at:
www.waterloo-biofilter.com → Products → Control Panels → Sand Filter Panel

Dosing Type: Timed to Biofilter & Demand to Disposal

Applications:

- Timed Dosing to Biofilter AND;
- Demand Dosing to Disposal

Operational Description

A sand filter dosing unit consists of 1 simplex timer unit and 1 simplex demand unit in series. The timer-controlled pump is placed in the Biofilter dosing chamber while the demand-controlled pump is in the Biofilter treatment unit.

The purpose of the timer is to balance flow evenly to the Biofilter for better treatment; thus, the goal is to dose consistently over the entire day. To achieve this goal, it is crucial to set the cycle timer properly.

The disposal bed polishes the Biofilter effluent by aerobic processes. To ensure optimal polishing, it is important to keep the bed aerated and not to hydraulically overload the bed. These could be accomplished by dosing intermittently and balancing flow to the bed. Since flow entering the Biofilter treatment unit is balanced by timer-controlled pumps, flow from the Biofilter to the disposal chamber is consequently intermittent and balanced. Flow entering the chamber does not need rebalancing and is pumped to the disposal bed on demand.

The sand filter dosing unit is suitable for time dosed small systems (3000 L/d < Design Daily Flow ≤ 10,000 L/d) with treated effluent pumped to the disposal bed.

Control Panel

A PS11 panel requires a 2-float tree timer and a PS Float tree for operation.

- In dosing chamber (Simplex Timer – 2 Float tree)
 1. *Timer Enable* (Start/stop cycle timer)
 2. *High Water Alarm float* (Activates audible and visual alarms)

- In treatment unit (Simplex Demand – PS Float Tree/ SPDT Float Tree)
 1. *Start/Stop float* (Turns pump on/off)
 2. *High Water Alarm float/ SPDT Float Switch* (Activates audible and visual alarms and inactivates timer pump in dosing chamber)

Dosing Chamber

The *Timer Enable float* starts/stops the cycle timer. When this switch rises, the cycle timer starts. The pump turns on and repeats timed cycles until the *Timer Enable float* drops, upon which the cycle timer stops. Please note that the timer always starts with the off portion of the cycle. The *Timer Enable float* should be clamped to 16" from the bottom of the pump chamber.

The *High Water Alarm float* in the dosing p chamber notifies the operator of a high water level in the tank. When this switch rises for more than 2 seconds, it activates the audible and visual alarms. A high water level may result from a surge of influent. The *High Water Alarm float* should be clamped to $\frac{3}{4}$ the height of the pump chamber from the bottom of the chamber. This is a safety factor to provide time for the operator to investigate and react to the problem before outbreaks occur.

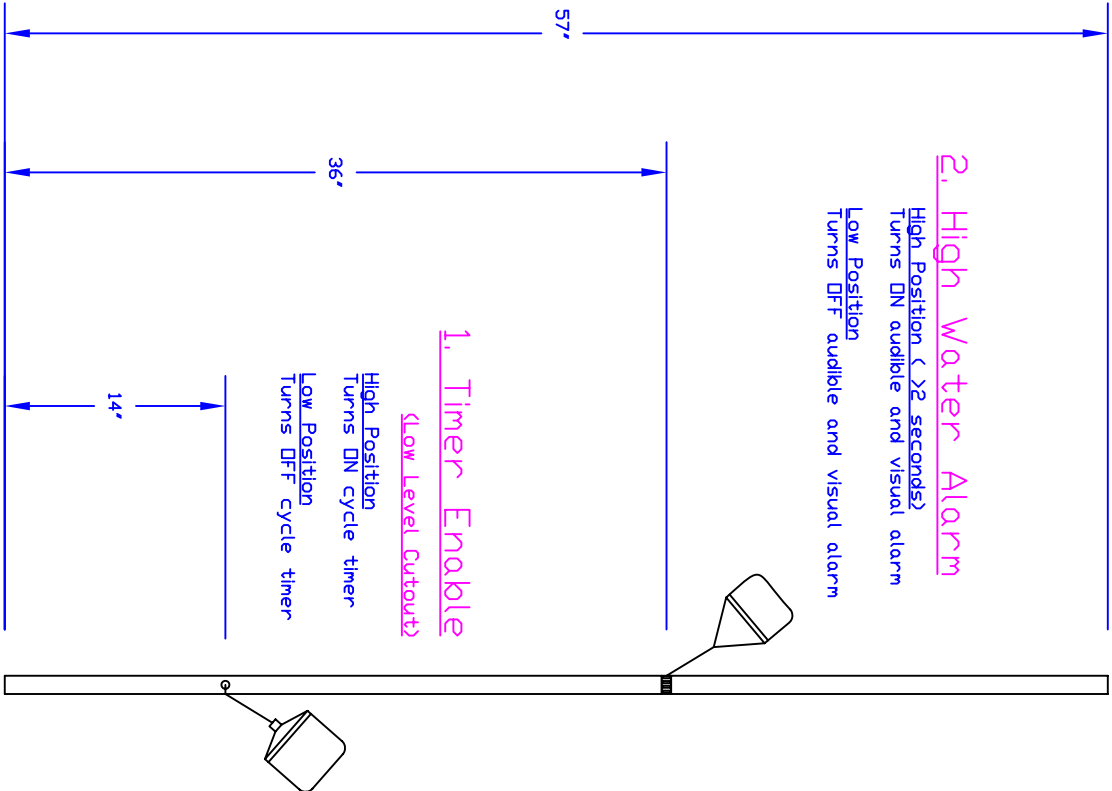
Biofilter Tank

The *Start/Stop float* turns the pump on/off. When this switch rises, the pump turns on. When this switch drops, the pump turns off. The *Start/Stop float* should be clamped to 16" from the bottom of the pump chamber.

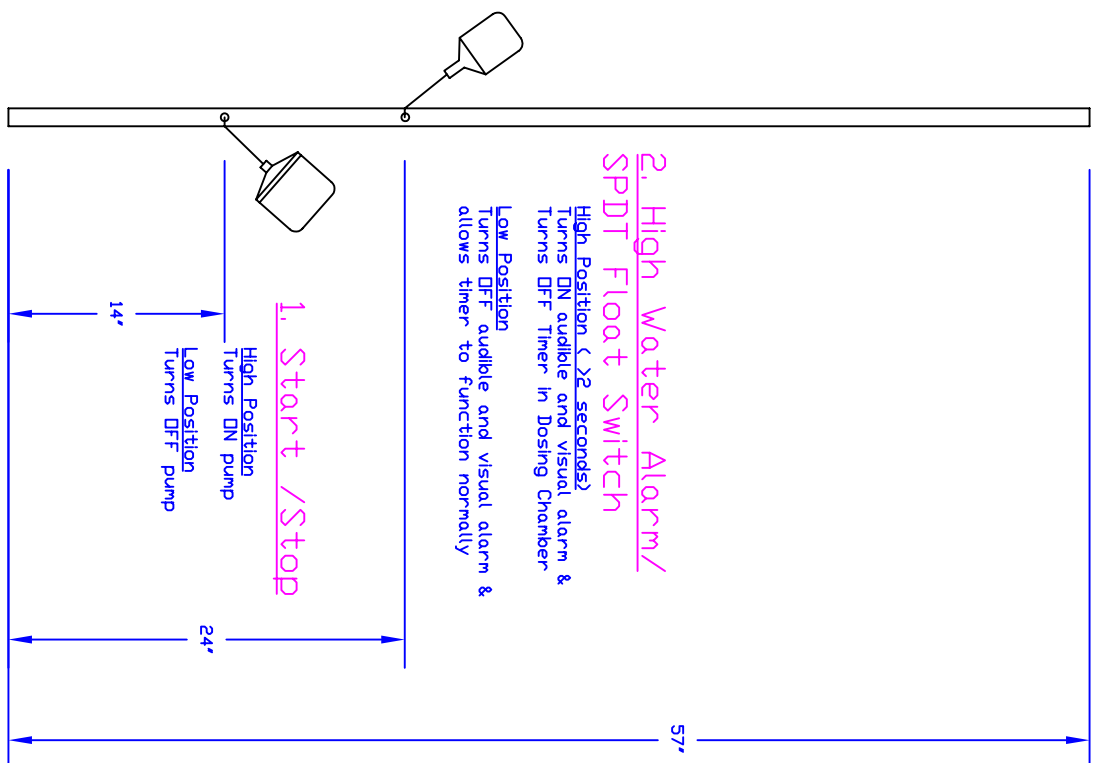
The *High Water Alarm float* in the Biofilter treatment unit is a Single-Pole-Double-Trottle switch (SPDT). When this switch rises, it simultaneously activates the alarms and disables the timer-controlled pump. This serves two purposes: 1) notifies the operator

of a high water level in the tank, and 2) prevents more water from entering the Biofilter. The *High Water Alarm float* should be clamped to the height of the treatment unit. This is a safety factor to provide time for the operator to investigate and react to the problem before outbreaks occur.

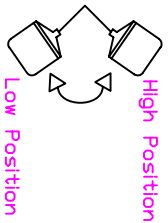
2-Float Tree: Inside Dosing Chamber
Timed Dosing



SPDT Tree: Inside Biofilter Tank
Demand Dosing



Legend



Sand Filter
Float Trees