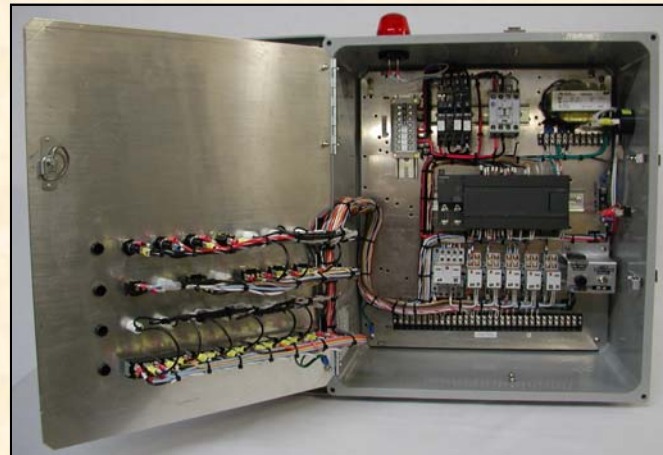
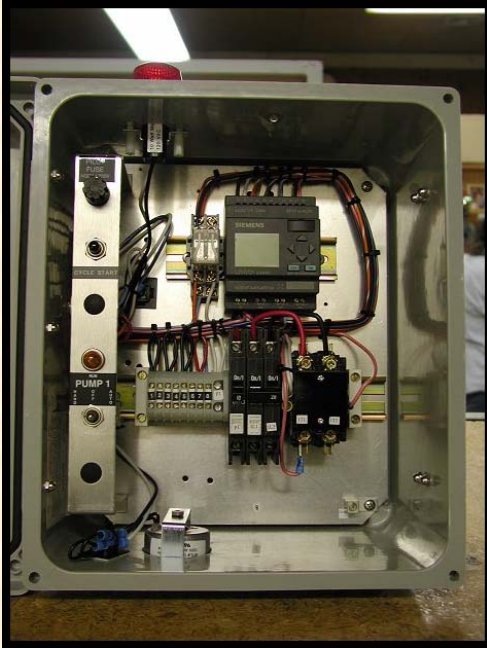




American Manufacturing Company, Inc.
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Flow Equalization Control Panels

Timed Dosing for the Best Wastewater Dispersal



Flow Equalization Benefits:

- *Reduce Field Failures*
- *Extend Life of Drain Fields*
- *Equalize Flow from Large Events*
- *Maximize Field Utilization*
- *Monitor Control System Status*



Flow Equalization Control Panels

Flow Equalization, the timer-controlled disposal of wastewater, increases field reliability and system life expectancy, while maximizing the utilization of available acreage. Peak flow events, such as church services or school functions, are measured out to increase field and control component life. In addition, many pretreatment systems also operate more efficiently with balanced regular dosing.

American Manufacturing's **Timed Dose Control Panels**, detailed below, lead the industry in reliability and versatility. Common features include high level alarm, alarm on override switch, auto-switch to simplex on pump fail, complete dosing, (normal and peak enable), as well as local and remote monitoring.

“SEQ” and “DEQ”

The “SEQ” and “DEQ” panels are Simplex and Duplex equalization control panels that provide economical, repeat cycle, time-based dosing control. When the water level enables the timer, the “Rest” time is initiated for equalization periods of up to thirty hours. The pump run time can be controlled from a few seconds to hours. The “Off/Enable” float allows the timer to turn the pump on or off and will shut the pump(s) off when a low level condition is indicated.

“SEPR” and “DEPR”

The “SEPR” and “DEPR” panels are Simplex and Duplex equalization control panels that utilize programmable relay logic to considerably enhance process control. The control is provided with both a “Redundant Off” and a “Dose Enable” float to eliminate short cycling of the pump. When the dose enable float is raised and the rest timer elapses, a “Run” time is initiated for a customizable time period, providing enhanced management of wastewater storage. When the “Dose Enable” float is de-energized during a pumping cycle, the pump will continue to operate until the timer elapses or the “Redundant Off” float is de-energized. The “Redundant Off” float protects the system by disabling the pumps in the event of low water.

“SEPT” and “DEPT”

The “SEPT” and “DEPT” panels are Simplex and Duplex equalization control panels similar to the “SEPR” and “DEPR”, except a Time of Day clock is utilized for dispersal during a specified time period(s) throughout the day. A 24-hour clock or a 7-day 24-hour clock can be utilized.

“SET” and “DET”

The “SET” and “DET” panels are Simplex and Duplex control panels that utilize a Time-of-Day clock. They allow for equalized water dispersal (timed water discharges/pumping cycles) within specified windows or specified periods of time throughout the day.

Prefix “C”

The prefix “C” in a model number designates a “Combination Control” panel. These controllers operate multiple separate-but-integrated pump stations, such as the timed dosing of a pretreatment unit and a final lift pump to a dispersal site. Any combination of controls can be provided in simplex, duplex, multiplex, or other custom pump configurations.

“DP”

The “DP” series panels are Drip Dispersal Controllers commonly used for residential as well as commercial drip dispersal applications. The residential “DP1” series can control up to four drip zones and up to two filters. The commercial “DP2” or “DP3” series can control multiple filters and zones with a flow capacity of up to 100,000 gallons per day. Zone and pump counters and elapsed time meters are provided within the PLC.

TIMER BASED FOUR FLOAT OPERATION

The pump control panel is equipped with four float switches to control the timed doses to be discharged. The four float switches, "Redundant Off", "Standard Dose Enable", "Peak Dose Enable" (optional), and "High Level" function as follows:

Redundant Off

The water level must be high enough to overcome the "Redundant Off" (first & bottom) float in order for the pump to be permitted to run. This float should be redundant to the timer to prevent excess run times that could run the pump dry.

Standard Dose Enable (Average Flow Setting)

When the water level rises high enough to overcome the "Standard Dose Enable" (second from bottom) float and the rest time expires, the lead pump will activate. The pump will continue to run for the length of time as adjusted on the pump run timer and then shut off. The pump(s) will remain off until the rest time again elapses after which the lead pump will again activate (as long as the "Standard Dose Enable" float is still up) and will run until the pump run timer finishes timing. This process will repeat until the water level drops below the "Standard Dose Enable" float and the pump run timer has timed out. By allowing the pump to finish a full cycle after the "Standard Dose Enable" float becomes disabled, short cycling of the pump is eliminated.

Peak Dose Enable (Design Flow Setting)

The control system may be equipped with a "Peak Dose Enable" circuit to manage peak flows and excessive water use. If the rising water level activates the "Peak Dose Enable" (third) float, the "Pump - Off - Pump & Alarm" switch is set to "Pump", and the peak time delay has elapsed, the lead pump will be dosed. When the peak circuit has been deactivated the "standard" pumping cycle will resume.

If the rising water level activates the "Peak Dose Enable" (third) float and the "Pump - Off - Pump & Alarm" switch is set to "Pump & Alarm", the alarm will activate. Once the peak time delay has elapsed, the lead pump will be dosed. The audio portion of the alarm may be silenced by pressing the Test-Normal-Silence switch to the silence position. When the "Peak Dose Enable" float has returned to the down position the visual portion of the alarm will be deactivated and the normal pumping cycle will resume. The alarm can be an auto reset alarm (it automatically resets itself when the float goes down), thus an intermittent alarm may indicate excess water use, or the alarm may be of the latching type which would require someone to physically acknowledge and view the alarm condition.

High Level

If the water level rises enough to overcome the "High Level" (fourth) float, the audiovisual alarm will activate. The audio portion of the alarm may be silenced by pressing the Test-Normal-Silence switch (located on the outside of the control panel) to the silence position. The alarm circuit may auto reset when the "High Level" float returns to its normal (down) position.

Combination Redundant Off & Timer Enable: The "Short Cycle" Problem

Some controls are specified with a "Combination Redundant Off & Timer Enable" float switch. If this "Combo" float is utilized, it may "short cycle" the final dose during each pumping sequence based on actual water usage, which negates the purpose of using the "Timer Enable" design for complete dose control. For example, when the morning flow in a house is discharged to the wastewater system, it may need to pump 130 gallons. If the control is designed to discharge 60 gallons per cycle, there will be two 60 gallon doses followed by one 10 gallon dose, then the system will shut down. For those systems depending on equal distribution or flow monitoring, the last short cycle dose is a problem. Therefore, the "Combination Redundant Off & Timer Enable" float switch should not be specified in these particular situations.



Simplex and Duplex Equalization Timer Controls

Typical options include: breakers for 115/230v pumps, single phase, NEMA 4X enclosure, auto-reset alarm, contactors and locking hasps.

Duplex timer controls have an additional alarm indication requirement in the event the system has a pump failure. If this happens and the system generates less than half of the design flow, a high level alarm will not indicate a pump failure. This occurrence makes the duplex system no better than a simplex control, just three times the price.

To solve this problem, controls (especially for multiple pumps) should have a **current sensor relay (Pump Fail Option)** that initiates an alarm condition when one of the pumps does not draw any current when it is being called to operate. The alarm will sound until the owner acknowledges the alarm via the "Test-Normal-Silence" switch.



Combination Simplex Equalization Controls

Typical options include: breakers for 115/230v pumps, single phase, NEMA 4X enclosure, auto-reset alarm, contactors, repeat cycle timer, cycle counters, elapsed time meters and locking hasps.

Combination Pre-Treatment to Final Dose Control Panels operate multiple but integrated pump stations, such as the timed dosing of a pretreatment unit and a final lift pump to a dispersal site. Any combination of controls can be provided in either simplex, duplex, or even custom configurations.



Drip Dispersal and Combination Pre-Treatment to Final Drip Dispersal Controls

Typical options include: timed dosing, auto-field and filter flushing, breakers for 115/230v pumps, single phase, NEMA 4X enclosure, auto-reset alarm, contactors redundant off, cycle counters, elapsed time meters with &

Drip Dispersal Panels, integrated as part of the Perc-Rite® Drip Dispersal System with automatic filter back flushing, periodic forward field flushing and timed dispersal intervals, offer the best alternative for anaerobic and aerobic systems as regulations allow.

Combination Pre-Treatment to Drip Dispersal Control Panels offer the most cost-effective, reliable systems when both drip dispersal and pre-treatment is required. These combination panels provide one central point for wiring, operating, troubleshooting and diagnostics, thereby reducing system and installation cost.