

PERC-RITE[®] OWNER'S MANUAL **AMERICAN TWO TANK DRIP SYSTEM**

4 ZONE COMBINATION DOUBLE SIMPLEX

PATENT NO. 5,200,065

PATENT NO. 5,984,574B

OWNER'S NAME _____

HEALTH DEPT. ID NO. _____

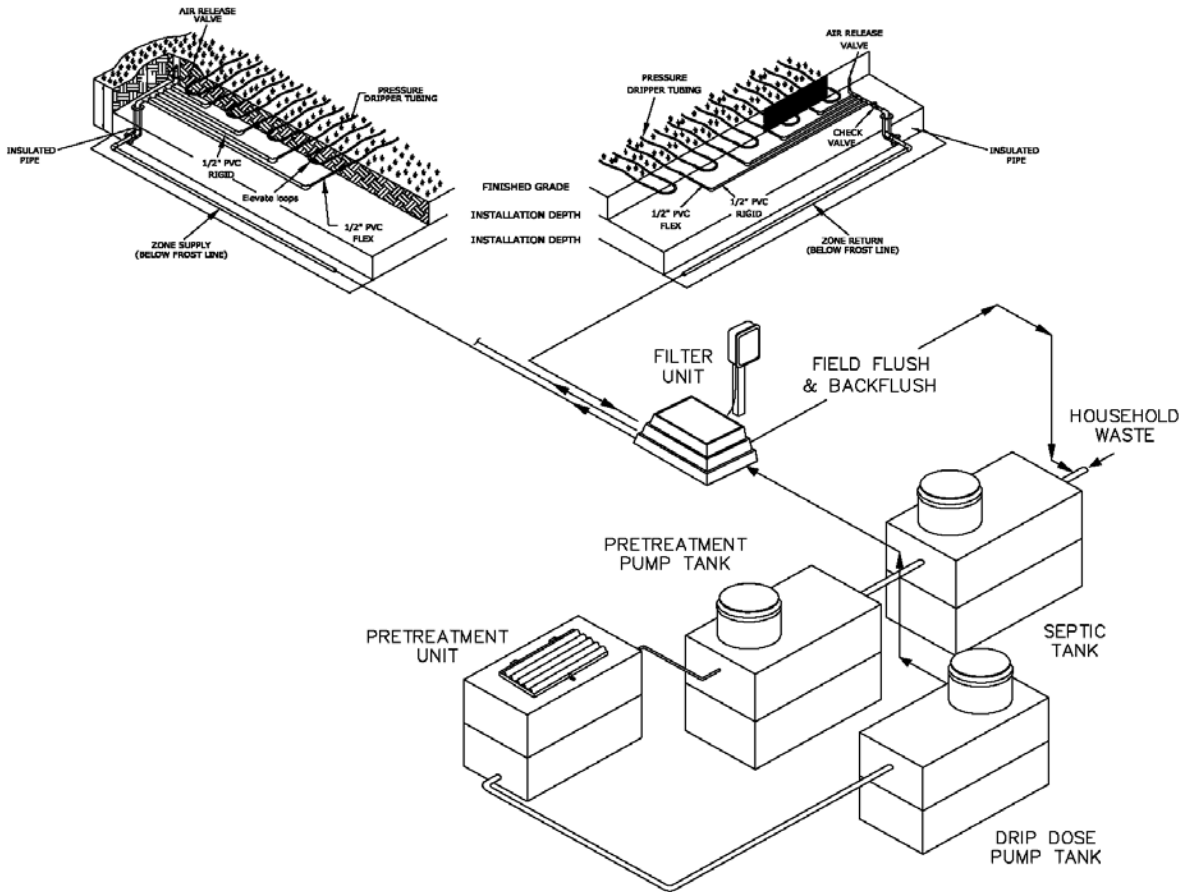


Table of Contents

American Manufacturing Limited Warranty	2
Introduction	2
Safety Precautions and Warnings	2
Owner's Responsibility	3
Overview of American Perc-Rite [®] Drip	3
Sequence of Operation	4
System Parameters of American Septic Drip	5
Installation Record & Operational Log	9

AMERICAN MANUFACTURING COMPANY, INC.

22011 GREENHOUSE ROAD, ELKWOOD, VA 22701

1-800-345-3132

© Copyright 2009

AMERICAN MANUFACTURING LIMITED WARRANTY

For one year (12 months) after the date of purchase, American Manufacturing Company, Inc. will repair or replace any product or portion thereof which proves to be defective due to materials or workmanship of American Manufacturing. We reserve the right to repair or replace defective materials at our discretion. This warranty does not cover the following conditions:

1. Defects or problems caused by improper installation or maintenance of materials.
2. Abuse, neglect or accidental damage of products.
3. Normal maintenance or upkeep of products.
4. Lightning, war, floods, or other acts beyond our control.
5. Misapplication of our products for their designed purpose, or misapplication according to local, state or national codes when in effect.
6. American Manufacturing Company or its representatives are not responsible for the labor for the replacement of defective parts.

Defective or warranted materials must be returned to us or a place designated by American Manufacturing. All returns must be accompanied by a return authorization number supplied by American Manufacturing.

American Manufacturing will in no way be responsible for any losses or damages incurred by failure of equipment, parts or service. NOTE: Some states do not allow exclusion of damages so this may not apply to you. There are no other warranties written or implied.

Introduction

Congratulations! You are now the owner of a state of the art wastewater treatment and recycling system by American Manufacturing Company, Inc. We have been in business for over 20 years and are considered one of the leaders in the On-Site Wastewater industry. With a staff having over 100 years collective experience in providing solutions to new sites and sites in need of repair, we are able to deliver an ecological, economical, easy to install and off-the-shelf **PERC-RITE[®] DRIP** to owners like yourself.

When and How to use manual

This owner's manual should be read cover to cover initially, and then as needed to answer any questions or assist the owner in fulfilling their maintenance and inspection responsibilities.

When and Where to call for assistance or get additional information

If at any time you have a question about the **PERC-RITE[®] DRIP** or observe any alarm or unusual condition, you should call your qualified service representative or installing contractor as soon as possible. The owner should record in the back of this manual, the contact name and telephone number of the qualified service representative and installing contractor. If further assistance is needed, call American Manufacturing Company, Inc. at 800-345-3132, or visit us at www.americanonsite.com.

Overview of Manual

The manual is organized to cover safety precautions and warnings, an overview of the **PERC-RITE[®] DRIP** components, and the owner's responsibility. A startup log and limited warranty are in the back of this manual.

Safety Precautions and Warnings

The owner or operator of the **PERC-RITE[®] DRIP** should take precautions consistent with operators working with sewage and/or electricity while working with, or around any of the system components.

Electrical Hazards

The **PERC-RITE[®] DRIP** incorporates pump(s), float switches, relays and many electrical components that use 230 volts, 120 volts or 24 volts AC. Improper use of equipment can cause an electrical shock and may lead to serious injury or death.

Sewage Hazards

Proper attention should be given to cleanup when working in and around the septic and pump tanks and wastewater handling equipment to insure that disease causing bacteria are not transmitted to persons or contact surfaces. The septic and pump tanks can allow for a toxic buildup of poisonous gasses that can lead to serious injury or death if inhaled.

Heavy Lifting Hazards

The owner and/or operator should exercise proper caution when lifting heavy system components, such as pump tank lids. Improper lifting of heavy components can lead to loss of limb and/or mobility.

Owner's Responsibility

Preventative Maintenance

The drip field area should receive only the most passive type yard uses. No use is recommended when conditions are wet. Under no conditions are any autos or heavy machinery to be allowed on the site.

In order to prevent erosion, the site should be established and maintained as a healthy lawn, or if wooded, mulched and stabilized. Erosion of the site and the adjacent areas should be controlled and eliminated. Surface waters should be diverted away from all components.

Scheduled Inspections

Within a month of operation the owner should contact the installer to have the system inspected for proper startup. After three months of operation the drip field should be walked and the system inspected. Symptoms to look for on the field walk inspection are patches of wetness. If symptoms are identified, notify your service provider immediately. The drip field should be walked & inspected at least annually.

The septic tank and pump chambers should be inspected at least once a year by a trained professional service provider, your American Dealer. The septic tank should be pumped when the sludge level reaches 25% or approximately 12 inches, or when the scum layer on top is excessive. The flow meter reading in the hydraulic unit should be recorded with the date on a quarterly basis.

Alarms - Notifying Service Provider of alarm events

The system controller is equipped with an audio-visual alarm to alarm for high water level conditions. The high level alarm may be silenced by pressing the "silence" button on the side of the control. Since a high water level condition can be caused by pump failure, excessive infiltration, or an unusually large peak water use, the owner should call the service provider to determine the cause of the alarm prior to requesting service.

If at any time there are any indications of failure, such as the flow meter not moving during a dose or wetness in the area of the drip field, notify your service provider immediately.

Monitor & Regulate waste input to septic tanks

Since all processes in this sewage disposal system use biological activity to treat the wastewater, only typical biodegradable household wastes are to be disposed of in drains leading to the septic tank. Never dispose of pesticides, oil or grease based products, or non-fecal solids (especially feminine hygiene products) into the system. Minimize disposal of high strength over-the-counter type products such as bleach, and do not use colored toilet tissue.

Overview of the AMERICAN PERC-RITE® TWO TANK PRETREATMENT TO DRIP

The system is a pretreatment and fluid dispersal system providing a combined two tank control for pretreatment and drip dispersal in one panel box. The pretreatment is followed by slow rate, equal distribution over an absorption area by way of subsurface drip irrigation tubing. Disc filtration is utilized during the final disposal process, filtering the fluid from the pretreat before final dispersal. The system incorporates two pumps to manage the system. The first pump, located in the pretreat feed tank, is for time dosing the pretreatment unit. The second pump, located in the final pump tank, provides the higher head required for the drip system's disc filter backflush and final disposal.

The pretreat pump for pretreatment, the drip pump, the disc filtration, and distribution systems are all managed by a single controller. The control allows reprogramming of the time and volume of dose to different individual zones (absorption areas) and/or pretreatment unit(s). In addition, the system water meter allows for the retrieval of water use information. The system provides for treatment and disposal on a time dose basis as opposed to typical conventional demand dosing. The dosing tank volume provides equalization for the accommodation of peak flows. The control unit insures time interval dosing of the treatment and absorption areas at the design loading.

If the design flow is exceeded for any extended period a high water alarm will sound. If the high water alarm in the final pump tank is activated, the pretreat feed pump will become disabled (optional). This is to prevent the liquid level in the final pump tank from rising due to accumulation of pretreat effluent. If flows are less than designed, the control will halt the pretreatment and drip dosing cycles until enough effluent has accumulated for a pretreat and/or final disposal dose. This provides resting for both the absorption area and pretreat. The dosing time may be altered to accommodate observed variance of historic water use as obtained from the flow meter. The system can be "tuned" for sewage flows at the site to insure that the absorption area is dosed at the proper interval. If use is considerably less than as designed, one zone maybe removed from service to rest the unused area.

SEQUENCE OF OPERATION - TWO PUMP TANKS & PRETREATMENT

Wastewater is received into a pretreat feed tank. The pretreat feed pump doses the pretreatment unit on timed intervals. The pretreated effluent drains into the final dose tank where the drip disposal pump periodically doses the drainfield for a preset time at a preset interval. The pump control panel is equipped with eight float switches, which control the timed doses to pretreatment and discharge.

The **pretreatment pump tank** has four floats (Pretreat Redundant Off, Pretreat Dose Enable, Pretreat Override, and High-Level Alarm) to control the timed dosing cycles of the pretreatment. The four pretreat float switches function as follows:

- **Pretreat Redundant Off** - The water level must be high enough to overcome the "Pretreat Redundant Off" (first & bottom) float in order for the pump to be permitted to run.
- **Pretreat Dose Enable** - When the water level rises high enough to overcome the "Pretreat Dose Enable" (second) float and the time clock has timed out the preset time delay of 90 minutes (adjustable rest between dosing cycles) the pump will activate and the pretreatment is dosed. The pump will continue to run for the length of time as adjusted on the pump run timer and then shut off. The pump will remain off until the internal time clock again times out the preset time delay (90 minutes) after which the pump will activate (as long as the "Pretreat Dose Enable" float is still up) and will run until the pump run timer finishes timing out. This process will repeat until the water level drops below the "Pretreat Dose Enable" float and the pump run timer has timed out.
- **Pretreat Peak Enable** - The control system will be equipped with a "Pretreat Peak Enable" circuit to manage peak flows and excess water use. If the rising water level activates the "Pretreat Peak Enable" (third) float the pretreatment will be dosed regardless if the preset timer has timed out. The pump will rest for the "Pretreat Peak Enable" rest time and continue to run and rest until the "Pretreat Peak Enable" float is deactivated and the run timer has timed out, after which the timer will return to the standard "Pretreat Dose Enable" preset rest timer. To operate as an "Override" function, set the "Pretreat Peak Enable" time setting a minimum "off time" such as 10 seconds.
- **High Level Alarm** - If the water level rises enough to overcome the "High Level" (fourth) float, the audio/visual 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 will latch until manually reset after the "High Level" float returns to its normal (down) position. The alarm circuit is manually reset by switching the High Level Reset/Off-Normal switch (located inside the control panel on the inner door) to the Reset position then back to the Normal position.

The **final drip dose tank** has four floats (Drip Redundant Off, Drip Dose Enable, Drip Peak Enable, and High-Level Alarm) to control the dosing cycles of the drip disposal drainfield. The four final dose tank float switches 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.
- **Standard Dose Enable** - When the water level rises high enough to overcome the "Standard Dose Enable" (second) float and the drip disposal time clock has timed out the "Standard Dose Enable" preset time delay(s) of 90 minutes, the pump will dose the lead zone. The pump will remain off until the internal time clocks again time out the preset time delay, and if the "Standard Dose Enable" float is still up, the drip dosing process will repeat itself. The drip zones will be dosed a total gallons per day equal to 60% of the design flow when the "Standard Dose Enable" float is in the up position.
- **Peak Dose Enable** - The control system will be equipped with a "Peak Dose Enable" circuit to manage peak flows and excess 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 preset time delay has exceeded the "Peak Dose Enable" preset time delay of 54 minutes, the pump will dose the lead zone. When the "Peak Dose Enable" float returns to the down position, the normal pumping cycle will resume. If the rising water level activates the "Peak Dose Enable" (third) float, the "Pump - Off - Pump & Alarm" switch is set to "Pump & Alarm", and the preset time delay has exceeded the "Peak Dose Enable" preset time delay, the pump will dose the lead zone, and the "Peak Dose Enable" alarm will be activated. 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 alarm will be deactivated and the normal pumping cycle will resume. The drip zones will be dosed a total gallons per day equal to 100% of the design flow when the "Peak Dose Enable" float is in the up position. The "Peak" function may be turned off by either turning the "Peak Enable" selector switch to "off" or by removing the "Peak Enable" float.
- **High Level Alarm** - If the water level rises enough to overcome the "High Level" (fourth) float, the audio/visual 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 will latch until manually reset after the "High Level" float returns to its normal (down) position. The alarm circuit is manually reset by switching the High Level Reset/Off-Normal switch (located inside the control panel on the inner door) to the Reset position then back to the Normal position.

Note - See page 5 for specific rest time settings for the 2, 3 or 4 zone, simplex or duplex control.

Drip Tubing

The drip field supply line conveys the effluent to the drip absorption zone that is being dosed where it is discharged below the soil surface through a patented chemical-resisting pressure compensating self cleaning "drip" poly-tubing emitter. The emitters or "drippers" are located every two feet in the tubing and emit 0.65 gallons per hour per emitter. The dripper lines are automatically scoured (forward flushed) every 50 dosing cycles. This function is activated by the controller which opens the field flush valve, thus allowing the flushed effluent to be returned to the pretreatment tank. The duration of this cycle is approximately three minutes. The flushing cycle produces a high velocity cleansing/scouring action by the effluent along the inside walls of the dripper tubing, PVC manifolds and emitters.

The construction of the drip tubing is unique in that the internal diaphragm and labyrinth provide for an exact amount of effluent to be discharged from each of its emitters which are spaced at two foot intervals along the entire length of the RAM drip tubing. Each emitter maintains a constant flow over pressure ranges of 7 to 70 psi. Because the effluent is distributed at an ultra low rate, large quantities of effluent may be economically distributed over large areas during controlled periods of time without saturating the surrounding soil.

Air Release Valves

The drip field return line conveys the effluent from the drip absorption zone (used to "flush" or clean the tubing) back to the pretreatment device. Each zone will have an air release valve housed in a small valve box at the highest point of the return manifold pipe in each zone. The valve will close when the water pressure arrives at the valve during each dose. The air release valve allows air to reenter the tubing after each dose to allow the tubing to drain. This also prevents the uphill tubing from draining water into the downhill tubing and overloading downhill tubing.

In the event of damage to the air release valve, effluent may leak from the system. This condition should be fixed immediately by replacing damaged parts. Air release valves should not be covered with soil or other material and should always be accessible to the service personnel.

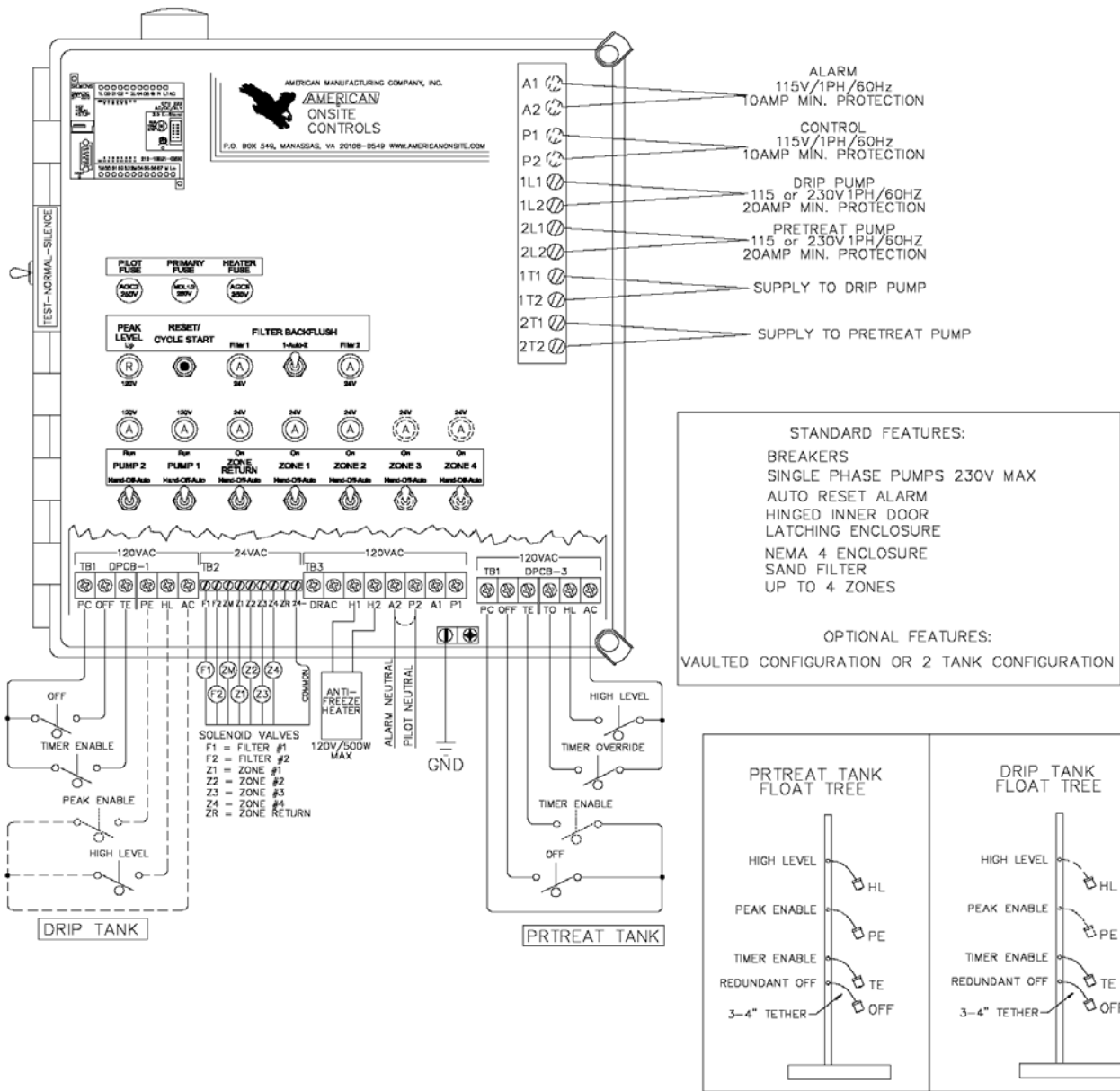
System Parameters of AMERICAN PRETREATMENT TO DRIP

Double Simplex System w/ 4 Zones & 2 Disc Filters and Two Pumps

- a. System Fail indicated by high level alarm or unusual wetness in the field.
- b. Standard Drip Field Rest time between doses = 90 min, 4 doses per day per zone.
- c. Peak Drip Field Rest time between doses = 54 minutes, 6.67 doses per day per zone.
- d. Standard Pretreat Rest time between doses = 90 minutes, 16 doses per day.
- e. High level alarm counter (OPTIONAL - record periodically to monitor activity).
- f. Peak enable counter (OPTIONAL - record periodically to monitor activity).
- g. Flow meter in hydraulic unit (record periodically to monitor Drip Disposal activity).
- h. To remove pump or zone from service place its control switch to "off".

Note: When **two** zones are in use the rest time is the same so the doses per day changes the doses per zone per day at standard rest, and the doses per zone per day for peak enable rest time.

Note: When **three** zones are in use the rest time is the same so the doses per day change the doses per zone per day at standard rest, and the doses per day per zone for peak enable rest time.



- To silence alarm - On outside of control push "Test-Off-Silence" switch to "Silence" and release.
- To Reset alarm - After alarm float goes down, on inner door place "Reset/Off - Normal" switch to "Reset/Off" position then back to "Normal".
- Manual Operation - Place "H-O-A" (hand-off-auto) switch to "Hand". This position is like an "on switch" and should operate the individual component regardless of other conditions.

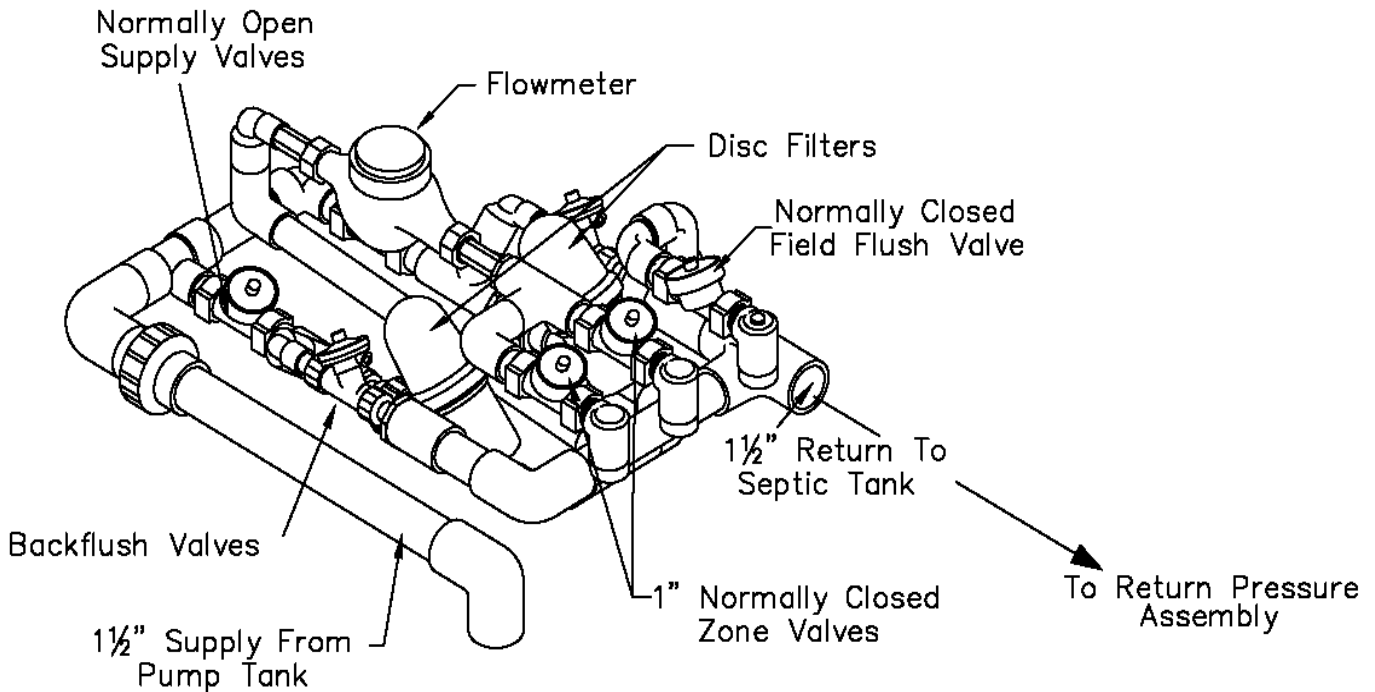
Controller

The "state of the art" controller is enclosed in an outdoor electrical control box located near and connected to the hydraulic unit. The control panel uses 115/230 volt power and the microprocessor has 115V and 24V AC inputs and relay outputs for automatic operation of the **AMERICAN TWO TANK PRETREATMENT TO DRIP**. When in the "Hand" or "Off" position, the manual switches (Hand-Off-Auto) on the door of the control panel completely bypass the microprocessor. The "Hand" position will allow manual operation of the entire system in the event of a microprocessor failure.

NOTE: THE HOMEOWNER ASSUMES FULL RESPONSIBILITY FOR CONDITIONS OR MALFUNCTIONS DUE TO MANUAL OPERATION OF THE SYSTEM BY ANYONE OTHER THAN A QUALIFIED SERVICE REPRESENTATIVE. LEAVING THE PUMP CONTROL IN THE "HAND" POSITION WILL FORCE THE PUMP TO RUN CONTINUOUSLY AND MAY RESULT IN PUMP FAILURE.

Hydraulic Unit

The submersible pump delivers unfiltered effluent to each filter. The filter backflushing schedule is triggered at the beginning of each dose cycle. One filter valve closes, thus blocking the flow of unfiltered effluent to that filter. After a short delay, the other flushing valve opens, thereby backflushing the unused filter. The accumulated impurities discharge back into the pretreatment unit. The closing and opening procedure of the filter and back flush valves causes a change of flow within the unit to provide filtered water from one filter to backflush the other filter. The backflush procedure lasts approximately fifteen seconds after which the back flushing valve closes. Only after the first filter has completed its backflushing cycle, will the second filter begin its cycle of backflushing in the same manner as the first. Effluent will then be pumped through clean disc filters, then through the **flow meter** and finally through the outlet manifold to the drip field supply line. During extended dose times the disc filters are re-backwashed to assure optimum operation.



MICROPROCESSOR 4 ZONE DRIP with PRETREATMENT INPUTS & OUTPUTS

SIEMENS MICROPROCESSOR - INPUTS & OUTPUTS

The Siemens microprocessor has inputs on the bottom and outputs on top. The two zone units have 8 inputs (0-7) and 6 outputs (0-5). The three and four zone has the following:

Output	Q0	.0	.1	.2	.3	.4	.5	.6	.7	Q1	.0	.1				
Input	I0	.0	.1	.2	.3	.4	.5	.6	.7	I1	.0	.1	.2	.3	.4	.5

MICROPROCESSOR - INPUTS AND OUTPUTS

R E F A	R E F B	R E F B		R E F A	R E F B	R E F B	
Input I0	Input I0	Input I0	Description	Output Q0	Output Q0	Output Q0	Description
.0	.0	.0	DOSE CUTOFF	.0	.0	.0	PUMP 1
.1	.1	.1	OFF LEVEL FLOAT	.1	.1	.1	ZONE RETURN
.2	.2	.2	DOSE ENABLE FLOAT	.2	.2	.2	FILTER 1
.3	.3	.3	PEAK ENABLE FLOAT	.3	.3	.3	FILTER 2
.4	.4	.4	RESET/CYCLE START	.4	.4	.4	FIELD 1
.5	.5	.5	PUMP 1	.5	.5	.5	FIELD 2
.6	.6	.6	ZONE 1 VALVE		.6	.6	FIELD 3
.7	.7	.7	ZONE 2 VALVE		.7	.7	FIELD 4
	.0	.0	ZONE 3 VALVE		.0	.0	PUMP 2 (PreTreat)
Input I1	Input I1	Input I1		Output Q1	Output Q1	Output Q1	
	.1	.1	ZONE 4 VALVE		.1	.1	ZONE MASTER
	.2	.2	PUMP 2 (PreTreat)				
	.3	.3	PRETREAT OFF				
	.4	.4	PRETREAT ENABLE				
	.5	.5	PRETREAT OVERRIDE				

References: "REF A" is Two Zone Combination Simplex System
"REF B" is Four Zone Combination Simplex System

PERC-RITE® INSTALLATION RECORD & OPERATIONAL LOG

Name: _____

Date: _____

Owner's Address: _____

American Perc-Rite® Drip Installation Record				OPERATIONAL USER LOG		
Line No.	As-Built Value	Description	Number of Zones: _____	Date	Flow Meter Reading	Usage
1		BEDROOMS				
2		GALLONS PER DAY				
3		TEXTURE GROUP				
4		GPD/FT2 DESIGN SOIL LOADING RATE				
5		TOTAL LINEAR FEET TUBING				
6		FILTER MODEL (ASD15, QM12, ETC.)				
7		FLOW METER READING				
8		ZONE 1 LINEAR FEET OF TUBING				
9		ZONE 1 NUMBER OF FIELD FLUSH CONNECTIONS				
10		ZONE 1 GPM DOSING FLOW RATE				
11		ZONE 1 GPM TOTAL FLUSHING FLOW RATE				
12		ZONE 1 RUN TIME				
13		ZONE 2 LINEAR FEET OF TUBING				
14		ZONE 2 NUMBER OF FIELD FLUSH CONNECTIONS				
15		ZONE 2 GPM DOSING FLOW RATE				
16		ZONE 2 GPM TOTAL FLUSHING FLOW RATE				
17		ZONE 2 RUN TIME				
18		ZONE 3 LINEAR FEET OF TUBING				
19		ZONE 3 NUMBER OF FIELD FLUSH CONNECTIONS				
20		ZONE 3 GPM DOSING FLOW RATE				
21		ZONE 3 GPM TOTAL FLUSHING FLOW				
22		ZONE 3 RUN TIME				
23		ZONE 4 LINEAR FEET OF TUBING				
24		ZONE 4 NUMBER OF FIELD FLUSH CONNECTIONS				
25		ZONE 4 GPM DOSING FLOW RATE				
26		ZONE 4 GPM TOTAL FLUSHING FLOW				
27		ZONE 4 RUN TIME				
28		PEAK ENABLE CYCLE COUNTER				
29		HIGH LEVEL CYCLE COUNTER				
30	CONTRACTOR STARTUP REPRESENTATIVE:					
31	STARTUP DATE:					

CONTRACTORS NAME & PHONE:

Signature _____

Date _____

Signature _____

Date _____

AMERICAN MANUFACTURING COMPANY, INC.
 22011 GREENHOUSE ROAD, ELKWOOD, VA 22718
 800-345-3132