AMERICAN
Manufacturing Company, Inc.

PERC-RITE® DEALER MANUAL
ASD15
(Fully Automatic)

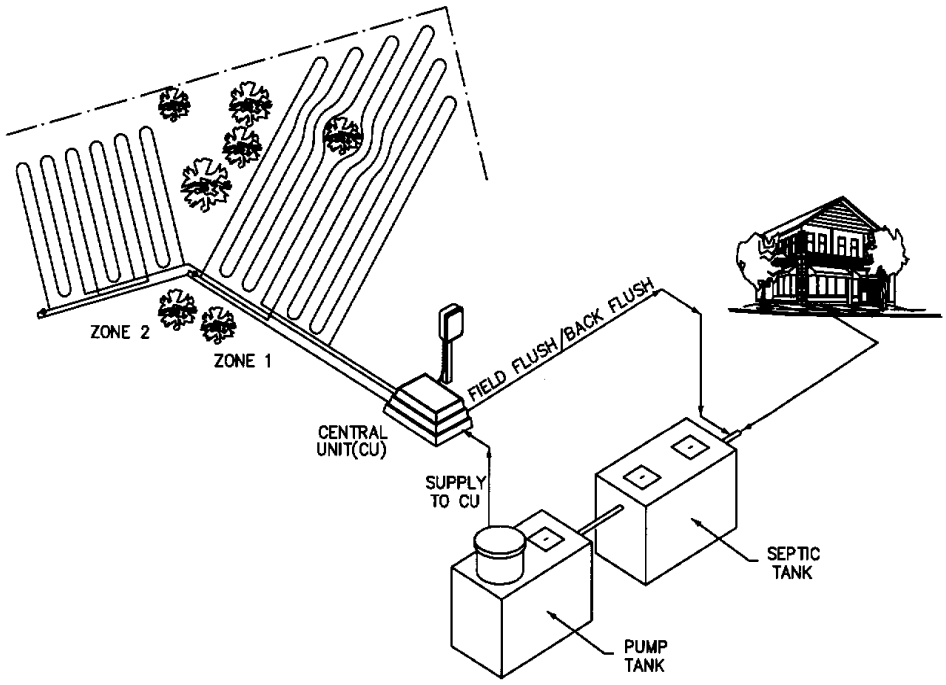
Installation/O&M Supplement

WASTEWATER DRIP SYSTEMS (Including "Micro-Mound")

2 ZONE or 4 ZONE
SIMPLEX or DUPLEX

SEPTIC or
SECONDARY TREATMENT

PATENT NO. 5,200,065 ; 5,984,574 ; 6,261,452B1



MANUFACTURED BY:
AMERICAN MANUFACTURING COMPANY INC.
22011 Greenhouse road Elkwood, VA 22718
1-800-345-3132

Table of Contents

Table of Contents	2
Dealer Responsibility	3
Overview of Perc-Rite® System	4
Specifications	5
Sequence of Operation	6
Standard Details	7
Pump Chamber & Hydraulic Unit Details	8-11
Installation Procedure Summary	12
Startup	13-14
Control Panel Installation Schematics	15-21
Data Monitoring Table	22
Operational Checklist	24
Order Information & Sales PR Page	26

IMPORTANT NOTICE

This Dealer Manual is intended to give information and guidance to authorized dealers and other qualified installers and operators. The final decision as to the suitability of a system must be made by the designer. Suitability should be based on consideration of the general standards and information contained herein as well as other applicable waste disposal reference materials, specific topography, soil characteristics, space limitations, and other factors associated with a particular project. American Manufacturing Company, Inc., a Virginia corporation, shall not be held liable in any manner to design engineers and other designers or installers of sewage disposal systems for claims arising from the use of the information contained herein nor actions arising from the reliance upon the accuracy of such information.

Additionally, unless American Manufacturing Company, Inc. or its employees are primarily responsible for a particular project, American Manufacturing Company, Inc. assumes no responsibility regarding, and shall not be liable to, any purchaser of a System in any manner for any of the following:

a. any decision regarding the suitability of a Drip Disposal System
b. the design and/or installation of a Drip Disposal System for any particular project, nor
c. the utility, application or functioning of a Drip Disposal System for the project.

Purchaser's rights are set forth in the limited warranty and the Equipment Purchase Contract (invoice) in the event that the equipment itself is defective.

By acceptance of this Manual, every recipient acknowledges that the material contained herein is copyrighted. The distribution and dissemination of this Manual in any form, including without limitation, printed or electronic media, is authorized for use for the sole purpose of the specification of American Manufacturing Company, Inc. equipment and materials. Unauthorized reproduction and distribution of the information contained herein is strictly prohibited. The information contained herein may be modified periodically by American Manufacturing Company, Inc. without any prior or subsequent notification being given or obligated to be given to any recipient of this Manual. The recipient of this Manual is responsible for ascertaining whether his or her manual is the most recent version available.

DEALER RESPONSIBILITY

PURPOSE

The purpose of this section is to outline the responsibilities of the Dealer regarding the installation, monitoring, maintenance and warranty of the drip dispersal system as part of an on-site sewage treatment system.

DEALER/INSTALLERS SCHEDULE OF DUTIES

- ◊ The Dealer shall be responsible for the entire Drip installation and shall only sell and/or install systems according to approved plans and permits.
- ◊ The Dealer/Installer shall be responsible for insuring proper electrical installation and startup including recording startup date and initial meter readings.
- ◊ The Dealer will meet standards for operation and maintenance per the jurisdictional health department.
- ◊ The Dealer shall assure that all employees who work on the American Drip System are trained per the Drip System manufacturer manuals.

OWNER'S RESPONSIBILITIES

- ◊ Acknowledge receipt and comply with instructions of the owner's manual provided. Reference owner's responsibilities in manual.
- ◊ Notifying the Dealer or the designated agent immediately of any problems with the sewage treatment system.
- ◊ Keeping the monitoring / access covers free of obstructions at all times.
- ◊ Granting Installer / Operator and health department personnel access to the owner's property to service or inspect the sewage treatment system at any time during warranty period.
- ◊ Pumping the septic tank or other costs associated with the treatment system is not covered under any warranty. Pumping is required from time to time (frequency) varies by jurisdiction just like in conventional systems due to the production of solids during the pre-treatment process.
- ◊ Failure to make any payments when due shall be considered a breach of warranty and the operator may terminate warranty work without notice.

OVERVIEW OF PERC-RITE® DRIP SYSTEM

The ***Perc-Rite® Drip System*** is a unique fluid handling system for dispersal of effluent wastewater in soil systems. The system incorporates filtration, time and level controlled application and ultra low rate drip distribution. In conditions where aerobic dispersal, such as "Low Pressure Distribution", of septic effluent is required or where land application with the use of conventional soil absorption fields are not acceptable, this system offers a unique method for subsurface distribution of the waste water effluent.

The ***Perc-Rite® Drip System*** will accommodate virtually any type of pretreatment process, whether septic tank (anaerobic), aerobic, lagoon, or any type of treatment facility. Only primary treatment (the removal of large settleable solids) of sewage is necessary for the operation of the system. Local soil and site conditions may require additional treatment for excessive organics, oil and grease or other contaminants.

Since the installation of the field distribution lines causes very little soil disturbance and effluent discharge volume from each emitter hole is insignificant, the installation of the system has very little site impact even in established lawns or park areas. After installation there are virtually no visible indications that the installation site is being used for disposal purposes. This system is especially suited for landscaped or wooded areas near buildings, trailer parks, apartment complexes or residential subdivisions.

The ***Perc-Rite® Drip System*** is operated via a "state of the art" controller, which is activated by level sensing devices (standard mechanical differential float switches) located in a dosing tank downstream from the pretreatment process or processes (typically a septic tank). When activated by the rising level of effluent in the dosing tank, the controller will enable the disposal cycle, and as dictated by the time clock, pump the effluent through a 115-micron disc filter and then to final drip dispersal.

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 two weeks. 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 and P.V.C. Manifolds. The tubing emitters are self-cleaning and require no maintenance.

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 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 (used to "flush" or clean the tubing) from the drip zone back to the pretreatment device. Each zone will have an air release valve housed in a small valve box at the farthest point of the return manifold pipe. This valve will close when the water pressure rises 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. For any sites with discernable slope, Top-Feed manifolds should be use which have air release on both the supply and return side. 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.

Specifications

DISC FILTERS - Disc Filters shall be an oblique filter, entirely of plastic, with two 3/4" male end connections to NPT schedule 40 pressure PVC. The filter elements shall consist of grooved rings, mounted on a spine, forming a cylindrical filter body. The rings are to be kept together by a spring seated at the bottom of the filter cover. The out-in filter shall have a EPDM rubber O-ring seal. The body materials shall be polyester, the spine and rings shall be polypropylene, and the spring shall be stainless steel. The nominal filtration capacity of the filter shall be 115 microns.

DRIPPER TUBING - The dripper tubing shall be Netafim Bioline pressure compensating dripper line for wastewater. The tubing shall be nominal 0.6 gallons per hour (+/- 5% flow rate from 7 to 70 psi). The tubing shall function as a turbulent flow emitter between 0 and 7 psi, ensuring that the nominal design flow is not exceeded at system start-up. The tubing shall be polyethylene 120 psi rating. Tubing end connections and splice connections shall be manufactured specifically for the tubing and for connection to standard schedule 40 NPT adapters.

AUTOMATIC CONTROL VALVES - The automatic control valves shall be solenoid activated diaphragm valves. The body and cover shall be reinforced nylon. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced poly isoprene. The seals shall be Buna -N. These valves shall operate electrically using hydraulic pressure to open and to close.

RETURN PRESSURE ASSEMBLY FOR ZONE RETURN CONTROL VALVE - The automatic zone return valve shall, in the event the drip zones are over 8 feet in vertical elevation above the hydraulic unit, have installed supply line check valves or a "return pressure assembly" or both as necessary. The assembly is to be used to prevent the line from draining after or during each dose. See standard detail.

GRAVITY PIPING - All gravity piping shall be schedule 40 PVC DWV as a minimum. Fittings shall be Schedule 40 PVC suitable for underground installation. All joints shall be solvent welded with the use of primer and PVC Glue.

NON-DRIPPER LINE PRESSURE PIPING - All non-dripper line pressure piping shall be PVC schedule 40. Rigid piping shall be standard ASTM 1120 for use with solvent welded Schedule 40 fittings. Flex piping shall be schedule 40 PVC flex pipe for use with pressure fittings.

FLOAT SWITCHES - Float switches for level indication and control shall be encapsulated mercury or mechanical differential switches. The switches shall be provided by American Manufacturing.

GENERAL VALVES - All gate, ball, globe and check valves shall be minimum Schedule 40, however schedule 80 valves are recomended. Check valves shall be of the swing check design of metallic bronze with corrosion resistant metal hinge pin for use in wastewater.

PIPING DISCONNECTS - Piping disconnects shall be PVC schedule 80 unions.

AIR RELEASE VALVES - Air release valves shall be nylon ball type air release valves for use with filtered effluent (nominal filtration size of 115 microns.)

WIRE SPLICES - Field wire splices shall be installed in suitable wire splice pull boxes with waterproof connections for access to splice connections. The boxes shall have structural capacity for in ground installation and light vehicle yard care traffic.

SPECIAL DRIP EQUIPMENT - All non-specified drip equipment shall be as supplied by American Manufacturing Company, Inc. including the controls, drip hydraulic unit, pumps, and specialty fittings.

PIPE BEDDING - In ground piping shall be installed according to local codes. Piping shall be installed on original soil or suitably compacted fill or gravel bedded excavations on original soil. Free standing piping shall be schedule 40 PVC and assembled with restrained joints.

Sequence of Operation: PERC-RITE® DRIP SYSTEM

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.

Standard Dose Enable - When the water level rises high enough to overcome the "Standard Dose Enable" (second) float and the time clock has timed out the preset time delay of 180 minutes (rest between dosing cycles for two zone designs) the pump will activate and the lead zone 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 (180 minutes) after which the pump will activate (as long as the "Standard 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 "Standard Dose Enable" float and the pump run timer has timed out. The rest time automatically varies with the number of Zones.

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 and the preset time delay has exceeded 108 minutes ("Peak Dose Enable" rest between cycles for two zone designs), the lead zone will be dosed. When the peak circuit has been deactivated the normal pumping cycle will resume. The rest time automatically varies with the number of Zones.

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 will auto reset when the "High Level" float returns to its normal (down) position. The high-level alarm float is a wide-angle float in order to latch the alarm signal.

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 or 230 volt power and the microprocessor has 120V and 24V AC inputs and relay outputs for automatic operation of the ***Perc-Rite® Drip System***. When in the “Hand” or “Off” position, the manual switches (Hand-Off-Auto) provided with the control panel, completely bypass the microprocessor. The “Hand” position will allow manual operation of the component in the event of a microprocessor failure.

NOTE:

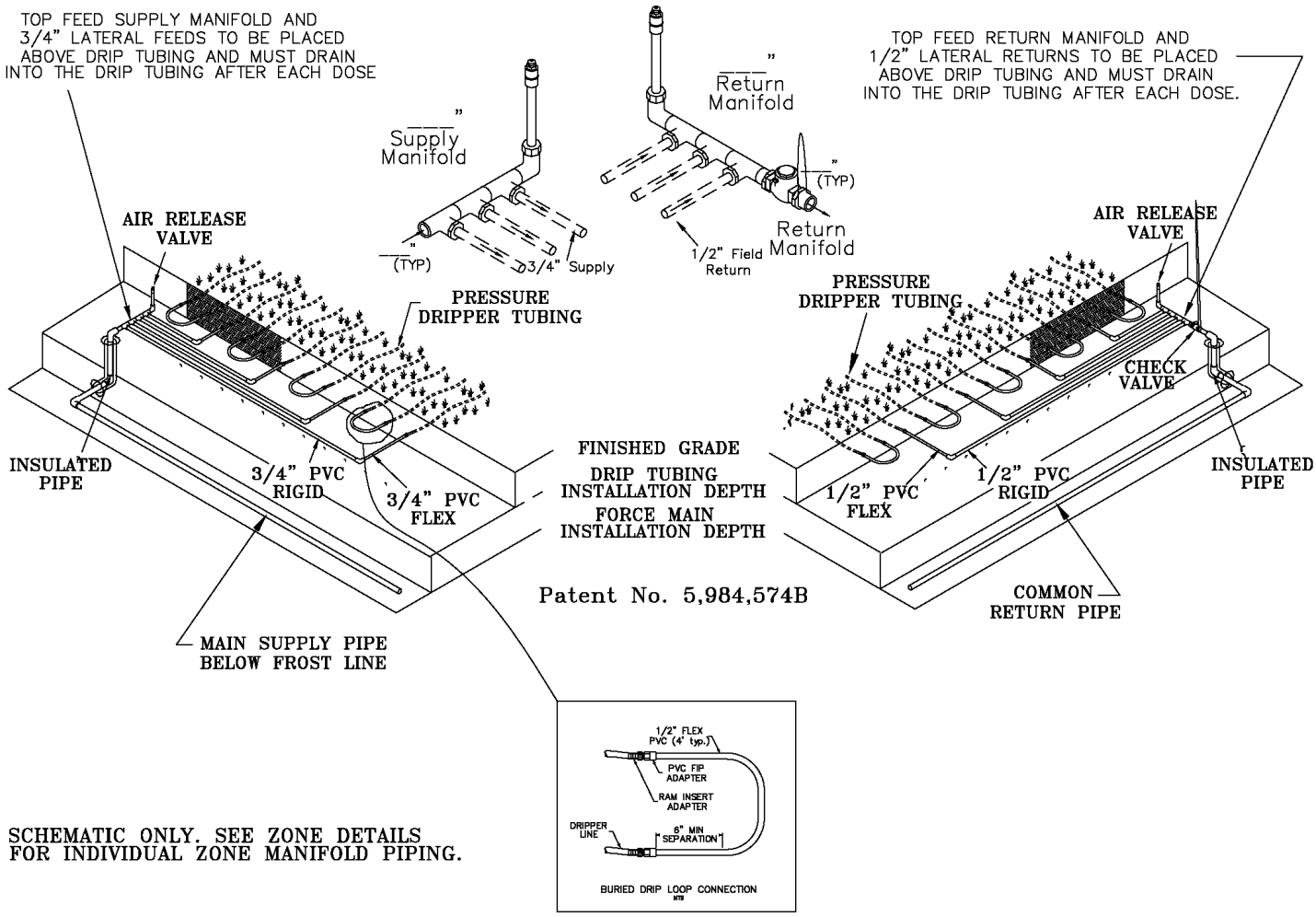
THE HOMEOWNER ASSUMES FULL RESPONSIBILITY FOR CONDITIONS OR MALFUNCTIONS DUE TO CHANGES IN PUMP RUN TIME BY ANYONE OTHER THAN A QUALIFIED SERVICE PROVIDER. LEAVING THE PUMP CONTROL IN THE “HAND” POSITION WILL FORCE THE PUMP TO RUN CONTINUOUSLY AND MAY RESULT IN PUMP OR VALVE FAILURE.

STANDARD DETAILS

REMOTE ZONE VALVE

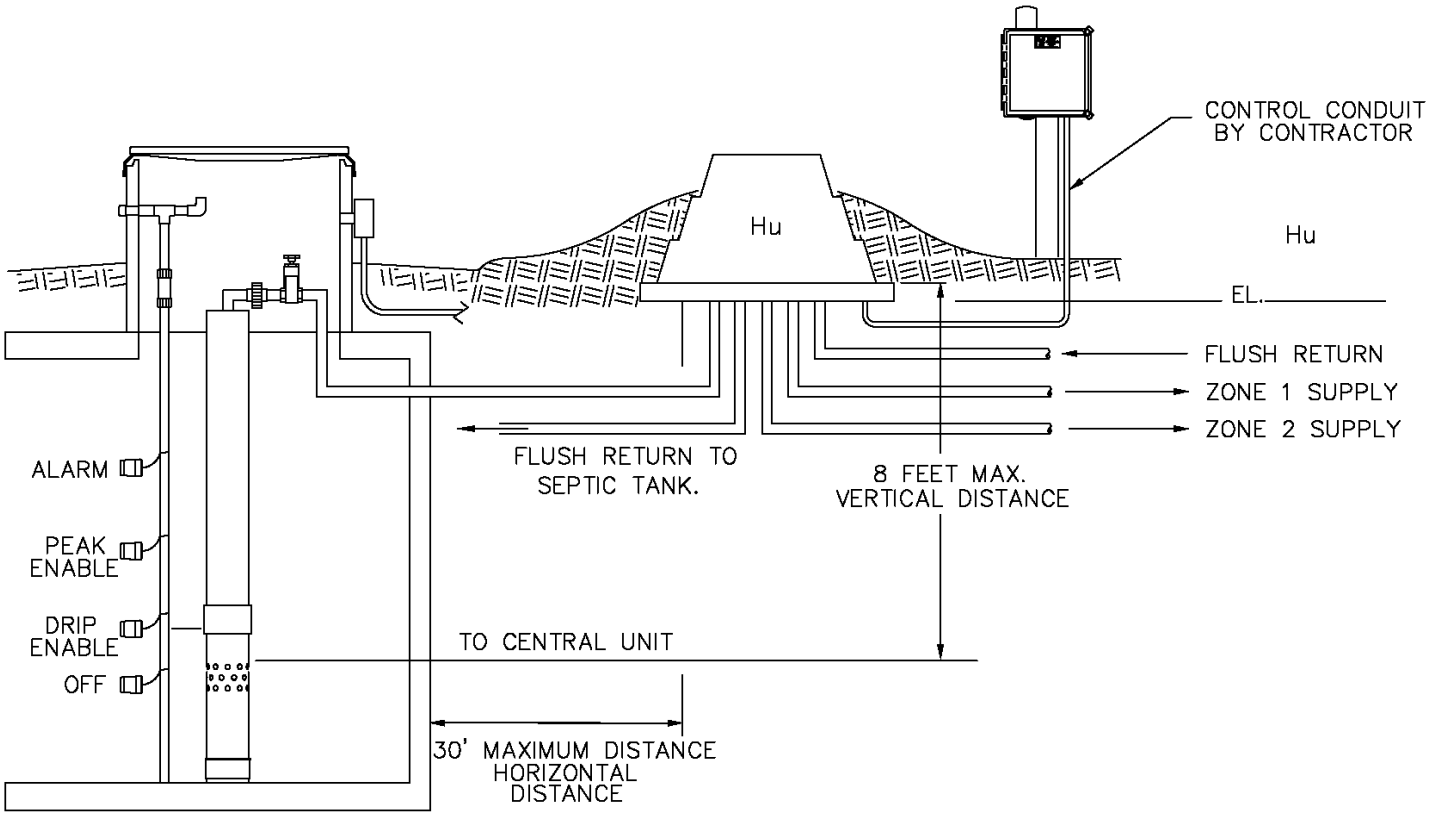
The remote zone valves are typically used on larger systems with more than four zones or when the zones are below the elevation of the Drip Hydraulic Unit. On slopes greater than 5% a bentonite clay plug should be installed three feet up slope from the valve box to prevent effluent from piping down the manifold and filling the valve box.

TOP FEED MANIFOLD (used on all sites with discernable slope to prevent upper laterals from draining into lower laterals after pump shut off).



© American Manufacturing Company, Inc., 2021

PUMP CHAMBER AND HYDRAULIC UNIT LAYOUT

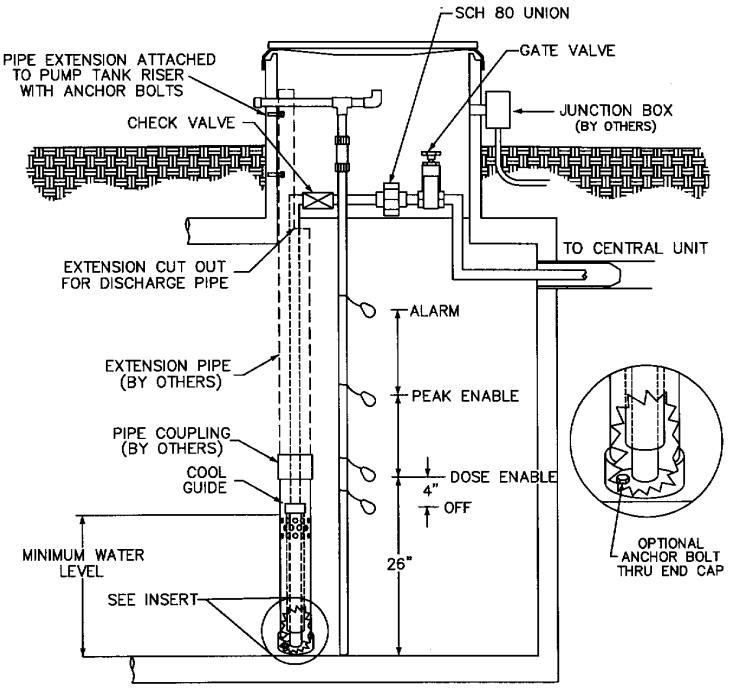


The hydraulic unit (HU) must be close to the pump chamber as shown. The limiting factor is the backflushing sequence for the disc filters. The (HU) must be within 30 feet horizontal and 8 feet vertical distance for the pump to have enough TDH to complete backflushing.

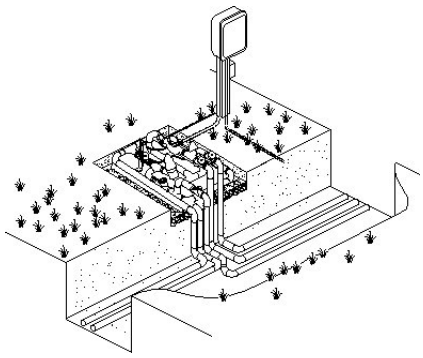
The return line to the septic tank must have gravity flow back to the septic tank. The 1-1/2" line must have a 2% slope to drain back or a check valve should be placed at the (HU) to prevent backpressure on the backflush valves. If longer distances are used, the line size should be increased to 2".

The pump should be placed as shown, within the CoolGuide™ assembly, secured on the floor of the tank. The pump discharge pipe must have **NO WEEP HOLE** . The pump is to be hard wired into an approved junction box.

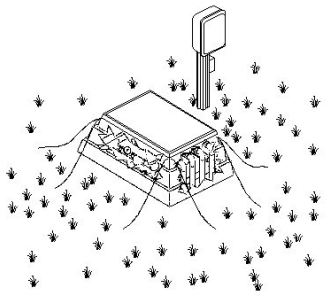
- ◊ Recommend half to full day storage between drip enable and high level alarm.
- ◊ Recommend at least one-quarter day storage between alarm and inlet of tank.
- ◊ Be sure to use the supplied 1.0" sch40 float tree kit to maintain proper minimum water level in the pump tank at the OFF float to protect the pump.



STEP 1



STEP 2



STEP 3

HYDRAULIC UNIT INSTALLATION STEPS

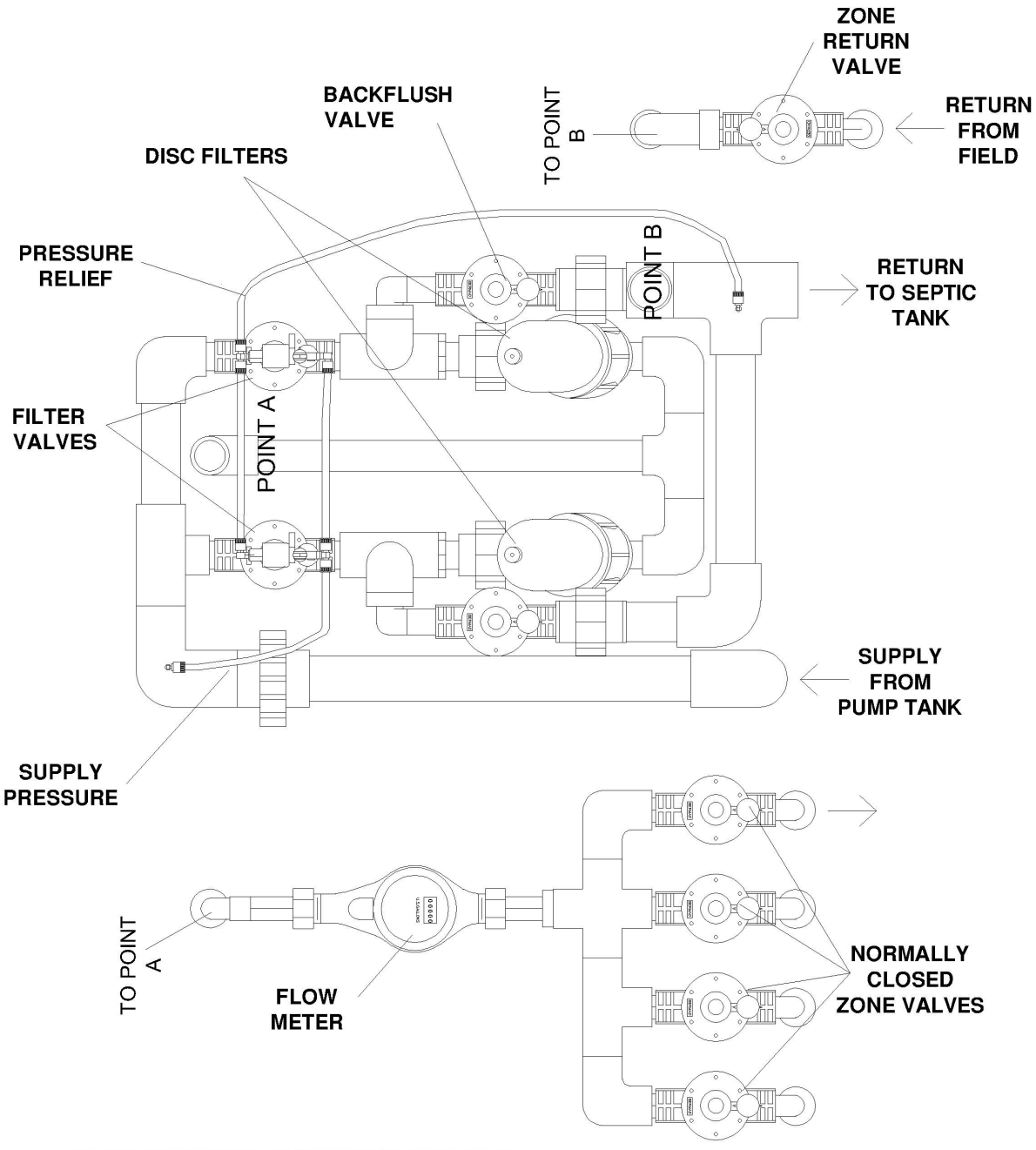
◊ Install pump and floats as shown. The pump must NOT be installed with a weep hole due to the high pressure. Pump must be "hard wired" to maintain warranty. A disconnect should be provided next to a suitable outdoor rated junction box. The "OFF" float must not allow the holes in the "CoolGuide" get exposed to prevent the pump from running dry or scum entering the device.

◊ Dig a side trench to set the hydraulic unit. The area must be free from groundwater or rainwater infiltration. **(If below original grade more than 4" the unit enclosure must have a positive drain.)** Center the unit on a gravel bed with the pipes slightly over the edge. Connect the supply and return piping. Install the control panel on a 4"x4" (minimum) pressure treated post with at least 3 feet of clearance from the bottom of the control panel to the ground. The electrician shall provide three sources of power to the control panel per the schematic enclosed in the control enclosure. The control wire shall be run through conduit to the control with no splices and connected to the terminal strip provided. Connect the heater, floats and pump(s) to the control panel.

◊ Install the insulated enclosure and backfill the area making sure not to damage any piping or electrical components. Provide positive drainage from around the central unit to insure no excessive rainwater will enter and rainwater which does enter will drain out. Provide a minimum of 4" of backfill above the bottom edge of the enclosure to help enclosure heater maintain temperatures above freezing. Additional mounding is preferred for freeze protection and aesthetics. Additional insulation within the enclosure is preferred in colder climates.

HYDRAULIC UNIT

The ASD 15 hydraulic unit, once installed and confirmed to be operational, becomes fully automatic and needs only periodic monitoring (typical annual cycle). The flow meter is used to confirm valve operation as well as recording usage. Reference operational check list for instruction.

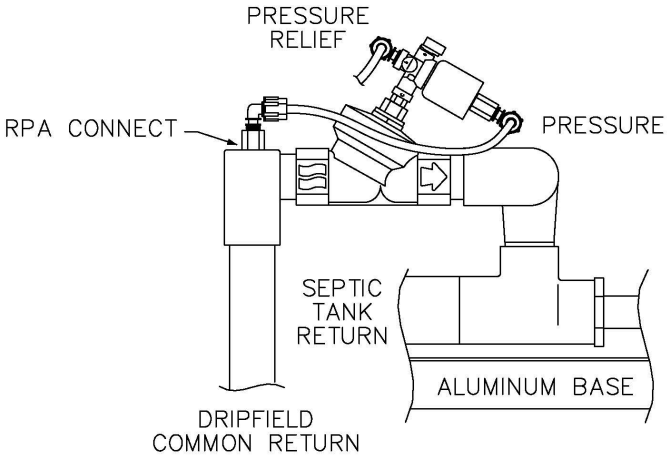


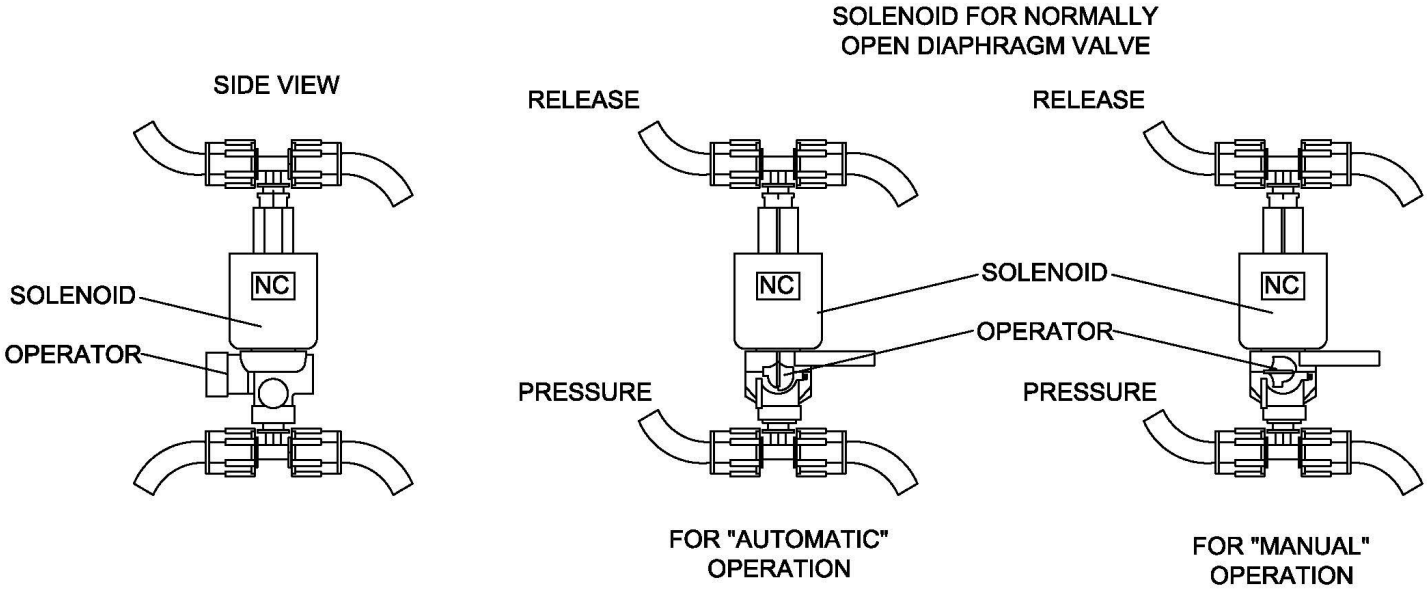
NOTE: TECHNICAL SUPPORT IS AVAILBLE FROM AMERICAN MFG. ON SYSTEM OPERATION AND INSPECTION. TOLL FREE 800-345-3132

RETURN PRESSURE ASSEMBLY;

NOTE: THE FINGER SCREEN PICKS UP PUMP PRESSURE FOR THE FLUSH CONTROL SOLENOID VALVES TO OPERATE. REMOVE/INSPECT IF LOW PRESSURE IS OBSERVED.

The return pressure assembly is used to keep the return pipe from draining after the pump turns off. The return valve must be replaced with a hydraulicly activated valve.





SOLENOID VALVE NOTES:

◊ The "normally open" filter valves have "normally closed" solenoids. The pressure is supplied through the operator and the connection. With the solenoid not activated, pressure bleeds off the diaphragm to downstream low pressure (septic tank return line). When the solenoid is activated, hydraulic pressure is allowed onto the top of the diaphragm which closes the valve.

◊ The zone supply, filter backflush and zone return valves use a "2-WAY" solenoid (2W). These valves rely on incoming pressure to the valve and a Normally closed solenoid to keep the valve normally closed. When the solenoid on these 2-Way valves are energized it allows the pressure that is holding the diaphragm closed to bleed off downstream and the valve opens.

PERC-RITE® DRIP SYSTEM INSTALLATION PROCEDURE

The following are recommended construction steps:

1. Deliver necessary equipment to the site and stage in an area where access and egress will not damage the installation area.

2. Prepare dispersal area for installation.

3. Set the septic tank, treatment unit (if applicable), pump tank and components including the pump, the Cool Guide™, the pump kit, the float tree, as well as the junction box, and wiring.

4. Place Hydraulic Unit at location specified on the design. A drained gravel base is needed. Gravity flow is needed for the flush line back to the building sewer line prior to the first tank. Mount the control panel and complete all necessary wiring. Make sure to properly ground the panel.

5. Dig ditches for supply and return manifold.

6. Dig ditches for supply and return lines.

7. Cut the tubing at the proper lengths (+4') and Install drip tubing at depth specified by the designer per instructions. (Cover ends with duct tape)

8. Construct loop ends to connect runs of tubing. Loop ends should be elevated to pitch into the drip tubing with specified final cover. Install loops (flex tubing) connecting ends of drip tubing.

9. Dry fit pressure lines and field manifolds.

10. Glue all fittings and place air release valve boxes around air release valves.

11. Install electrical service and connections to components.

IMPORTANT: Notify the "Startup" Dealer you are starting a new installation and a startup inspection is requested.

12. **Before backfilling any of the system components,** the start-up must be performed. This must be scheduled with the Contractor. The pump tank must be filled with clean water for the Start-up and the system needs to be pressure tested for leaks prior to being backfilled. Flush all fields through the air release valves. Operational checklist should be filled out.

13. Add the enclosure to the Hydraulic Unit and prepare to backfill around all components.

14. Backfill once lines and fields are determined to have no leaks. Backfilling is to be controlled to prevent damage to the pipes or fittings. Do not compress soil over the field.

16. Grade, seed, and mulch site and coordinate final inspection.

17. Fill out and send in the warranty registration form.

Startup Procedures - *AMERICAN Perc-Rite® DRIP*

This procedure outlines the startup procedures for the drip dispersal field tubing system. The process includes flushing dirt, pipe shavings and other possible construction debris out of the tubing and checking dosing rates in a three step process. First, flush through air release valves, second flush through normal flushing process (while checking flow rate), and finally checking final dose flow rate.

I. System Flushing Air Release Valves Off

a. Be sure pump chamber is full of clean water. Check float status screen on LCD display on controller for float activation. The "Off" float and "Enable" float should be in the up position before starting field flush. Continue to fill tank to "High Water" float. It should take one days' flow of clean water to flush tubing.
b. Place all toggle switches in the "Off" position and place filter backflush switch in the "Auto" position.
c. Remove air release valves, attach piece of 1/2" black flex PVC (5' maximum) to 1/2" white PVC with dry coupling (do not glue) and place end to direct discharge away from excavation.
d. Switch pump to "Hand" position. Pump should dead head with no flow meter movement.
e. Place filter backflush to filter #1 position. Note backflush valve opening and return to tank. Backflush for 15 seconds, Place filter backflush switch to the "Auto" position.
f. Place disc filter backflush to filter #2 position. Note valve opening. Backflush for 15 seconds, Place filter backflush switch to the "Auto" position.
g. Turn zone #1 to hand position to allow a manual field flush. After water starts discharging from flex PVC, continue to flush for at least three (3) minutes or until no debris (dirt, PVC shavings, etc.) is noted, whichever is greater.
h. Repeat item "e" & "f".
i. Repeat "g" & "h" for each additional zone.
j. Place all toggle switches in the "Off" position and place filter backflush switch in the "Auto" position.
k. Remove black PVC hose, dry, and glue coupling with air release valves.

II. Field Flush Flow Test

a. Determine each zone flushing GPM by multiplying the number of lateral connections by 1.6 and adding to the dosing GPM. (see "a" in step III) Resultant should not exceed 15 GPM for the two disc filter rack.
b. Switch pump to "Hand" position. Pump should dead head with no flow meter movement.
c. Place filter backflush switch to filter #1 position. Note valve opening. Backflush for 15 seconds. Place filter backflush switch to the "Auto" position.
d. Place filter backflush switch to filter #2 position. Note valve opening. Backflush for 15 seconds. Place filter backflush switch to the "Auto" position.
e. Turn switch for "Zone #1" and the "Zone Return Valve" to "Hand" position to allow a manual flush. After water starts flowing through zone return valve, flush for three (3) minutes, check flow rate and compare with design flushing flow rate.
f. Place all toggle switches in the "Off" position and place filter backflush switch in the "Auto" position.
g. Repeat item "b", "c", "d" & "e" for each additional zone.
h. After flushing the last zone leave the pump and zone valve in the "Hand" position and close the zone return valve "Off". After the flow rate stabilizes and compares to design flow rate, see next section.

III. Field Dose Flow Test

a. Determine each design zone dosing Gallons Per Minute (GPM) by the following formula: (If installed as designed compare to calculation sheet.) The emitters dosing rate per emitter is 0.6 gallons per hour (gph). The Length of tubing in the zone.

((Length of Tubing/2)0.6 gph)/60 minuses per hour = Gallons Per Minute Dosing

b. Determine dosing flow rate in the last zone flush tested. The rate should be close to value calculated in "a" above. Check for leaks and repair as necessary.
c. With all toggle switches in the "off" position, backflush filters as described above instep II's "b", "e", & "f".
d. Move the next zone switch to the "Hand" position and make sure the Zone Return switch is in the "off" position, watch flow meter slow as system fills. When pressurized, measure flow rate with stopwatch. The rate should be within 15% of the value calculated in "a" above. Check for leaks and repair as necessary if the rate is >15% high. If the rate is too low, make sure correct tubing length and configuration was installed and there are no crimps in tubing.
e. Repeat for each additional zone.
f. Place all switches in the "Auto" position.

IV. Timer Adjustment / Automatic Mode

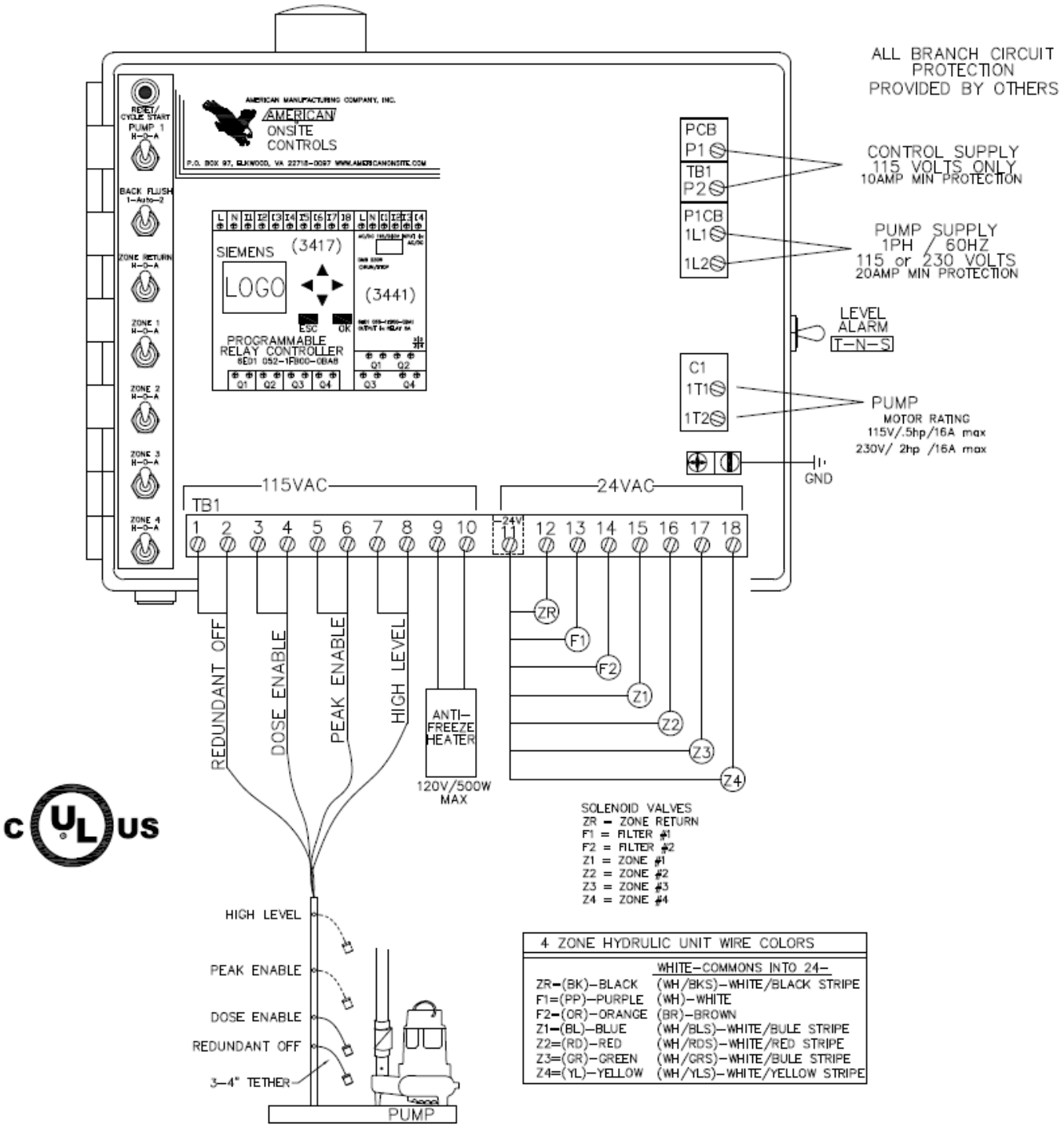
(Note: Timer "Enable" float must be up for automatic operation)

a. Write down gallons from flow meter and target total gallons dose for all Zones.
b. **Place pump in auto position, all zones in "auto".** Follow the procedure to set the pump Run, Standard Rest & Peak Rest times if different than presets.

4-ZONE Control Installation Schematic

The Perc-Rite® Control panel is designed using a PLC (programmable Logic Controller) for automatic operation of the entire system. Operational data is available internally that can be used to populate the table on the last page of the owner manual for a historical operational record. In the event the PLC becomes inoperable, the system can be manually operated using the H-O-A (Hand-Off-Auto) switches provided for each component.

WARNING: Never leave components in the "Hand" position unattended! Extended operation of any component will lead to failure.



4 ZONE HYDRULIC UNIT WIRE COLORS	
	WHITE-COMMONS INTO 24-
ZR=(BK)-BLACK	(WH/BKS)-WHITE/BLACK STRIPE
F1=(PP)-PURPLE	(WH)-WHITE
F2=(OR)-ORANGE	(BR)-BROWN
Z1=(BL)-BLUE	(WH/BLS)-WHITE/BULE STRIPE
Z2=(RD)-RED	(WH/RDS)-WHITE/RED STRIPE
Z3=(GR)-GREEN	(WH/GRS)-WHITE/BULE STRIPE
Z4=(YL)-YELLOW	(WH/YLS)-WHITE/YELLOW STRIPE

Perc-Rite© Drip
1-4 Zone System Controller
Programming instructions for the Siemens LOGO! PLC

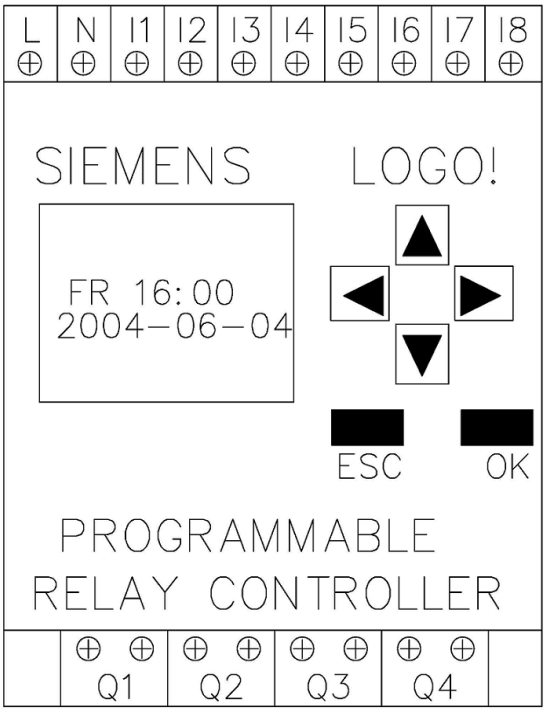
VERSION 1.1 8/1/2021

PLEASE REVIEW SEQUENCE AND ALL THE FOLLOWING INSTRUCTIONS BEFORE ATTEMPTING TO CHANGE SETTINGS!

WARNING! DO NOT USE THE "PROGRAM", "NETWORK" OR "DIAGNOSTICS" SCREENS!

ALL SCREENS NECESSARY FOR SETTING UP THE PLC ARE FOUND BY SIMPLY PRESSING ▲ THE UP ARROW KEY FROM THE CLOCK SCREEN!

If the screen backlight turns ORANGE, STOP! ONLY the clock is changed through the "Display #1" screen below!



Turn the power on to the LOGO microprocessor (P1 circuit breaker - ON) with all the HOA switches in the "OFF" position. Press the up or down arrow buttons to view available screen information. The last screen, Time and Date, can be adjusted if necessary to current conditions (see below).
WARNING: Time and date must be set for proper operation

The image to the right shows the logo unit itself showing the time clock screen.

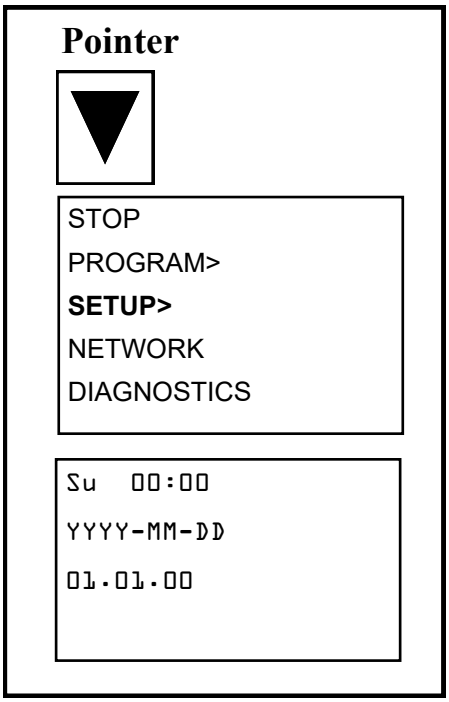
Display #1 appears whenever the escape key (ESC) is hit at the clock screen or if a program is stopped or if no program exists.

The controller is factory preprogrammed for a repetitive cycle type system which starts with the off period. The preset functions are shown on the screens below on page 17

Setting the Clock (Display #2)

WARNING: Time and date must be set for proper operation. Arrow down to date/time screen, set clock by pressing ESC. Scroll down to SETUP and press OK. Arrow down to clock and press OK, arrow up to set clock press OK. Use UP down arrows to change values, Left and Right arrows to move to the next value. Press OK when done, then press ESC until you get back to the date and time screen.

WARNING: DO NOT GO INTO THE "PROGRAM", "NETWORK" OR "DIAGNOSTICS" SCREENS! ALL SCREENS NECESSARY FOR SETTING UP THE PLC ARE FOUND BY SIMPLY PRESSING THE UP ARROW FROM THE CLOCK SCREEN! Any changes to parameter settings through these screens will void warranty and the operator may be responsible for having the PLC re-programmed.



Program messages

The program messages are displayed when the particular routine of the program has been enabled. For example, when a pump is dosing a drip zone, the Dosing pump run time screen can be seen. The following screens are show as noted;

- The count down for a cycle start is viewed when reset/cycle start push-button is held (displayed only while holding reset button, dose starts at 10 seconds, field flush starts if held for 20 seconds)
- field flushing in progress (displayed only while field flushing)
- filter back wash in progress (displayed only while back flushing filters)
- field flushing enabled for next dose cycle (displayed only when next dose is field flush)
- pressurizing zone for field flush (displayed only when pressurizing zone)
- zone dosing target (displayed when dosing in progress or with all zone HOAs in manual)
- filter/field flush settings (only displayed with all zone HOAs in manual)

Edit Screens "Pump Run Time & Pump Rest Times"

▶ Any line with this ARROW icon can be changed.

The functions that may be edited are: Dose Target (Run Time) for each zone, Peak Rest, Standard Rest and quantity of Filters. To adjust these settings, go to the respective screen below and follow the instructions.

EDIT SCREENS

The following screens are shown when all H-O-A switches are in the "OFF" position.

#1: Setting Pump Run Times (ZONE DOSING TARGET, Screen #1):

	ZONE DOSING	
	TARGET	CURRENT
1 ▶	15:15m	00:00m
2 ▶	10:15m	00:00m
3 ▶	05:15m	00:00m
4 ▶	20:15m	00:00m

Screen 1

NOTE:

THE HOMEOWNER ASSUMES FULL RESPONSIBILITY FOR CONDITIONS OR MALFUNCTIONS DUE TO CHANGES IN PUMP RUN TIME OR OTHER SETTINGS BY AN UNQUALIFIED SERVICE PROVIDER.

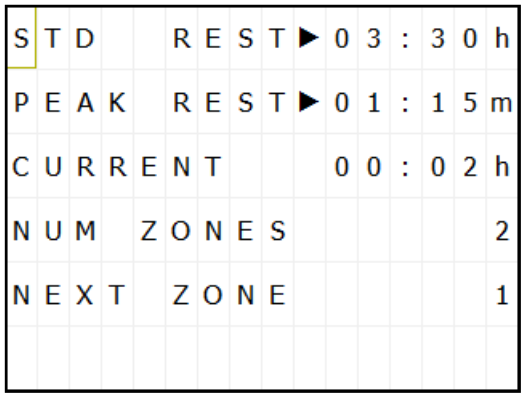
THE DOSING TIME MUST BE SET AND IS DISPLAYED IN MINUTES AND SECONDS (MIN:SEC).

NOTE: This screen is only available when all zone HOA switches are in the **OFF** position. The screen also will display once an automatic dose has been started.

Set Zone run times, Standard rest time, or Peak rest time by using the UP and Down arrows to get to the appropriate screen. Press and hold ESC until highlighted. Press OK to begin the edit process. Use Up and Down arrows to change values while Left and Right arrows advance to the next number to edit. When finished, press OK to lock in value, and then press ESC twice.

NOTE: Settings can be changed while the program is running.

#2: Setting Pump Rest Times (Standard & Peak, Screen #2)



Screen #2

NOTE: Settings can be changed while the program is running.

Press and **Hold** the **"ESC"** key until the Standard Rest Time is highlighted. **Press** the **"OK"** button and the first location will start flashing. **0**1:30h. **Press** the pointer button > to select the number of rest hours/minutes (hh:mm) for the standard and peak rest times to be set. **Press** the pointer button up/down to change the number from 0-9. Continue this process until the desired time is entered. Continuing to the far right with > pointer will allow the time range to be changed from hours to minutes (mm:ss) of rest time. *Example: If you want the Standard Rest time to be 2 hours and 35 minutes you would need it to display "02:35h"* When entries are complete **Press** the **"OK"** button. **Press** the **"ESC"** key twice and the entry will be complete.

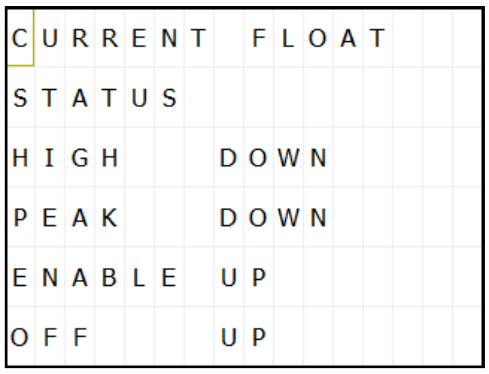
**Standard Rest time may be referred to as "Average" rest time in design plans.*

This screen also indicates the number of zone HOA switches that are currently in the AUTO position as well as the next zone in program sequence to dose. If the PEAK level float is up the text "PEAK UP " will display at the bottom right of screen. If the HIGH LEVEL ALARM float is up, the text "HIGH UP" will display at the bottom left of screen.

DATA SCREENS (Keep Scrolling with the DOWN pointer key)….

Float Switch Positions (Screen #3)

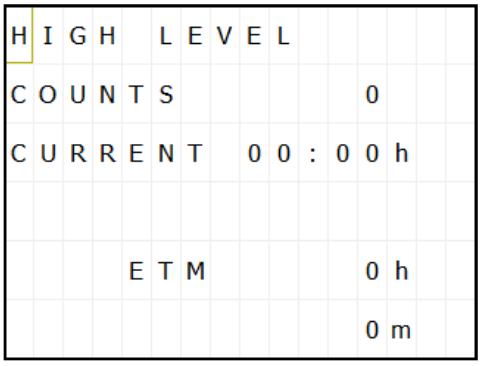
The 3rd screen shows the current status of the pump tank float switches. "UP" means the float is up or submerged, "DOWN" means the float is down or not submerged.



Screen #3

**Float Operating Conditions

The controller is configured to monitor the four available floats. The monitored float inputs are "Redundant **Off**", "Dose **Enable**", "**Peak** Enable" & "**High** Alarm". The float positions in the tank are indicated by a "on" meaning the float is submerged or "Off" meaning the float is NOT-submerged. The lowest float is the "Redundant Off" float. When this float is down the rest timer will elapse and no action will take place. Once the "Redundant Off" and "Dose Enable" float are BOTH activated and the rest timer has elapsed, the "Cycle Run" is signaled.

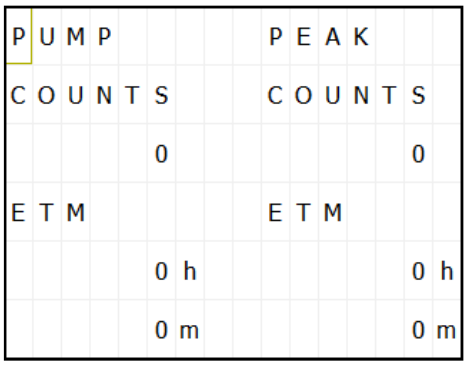


Screen #4

High Level Alarm Float Counts/ETM (Screen #4)

This screen shows the total High Level Alarm counts and how long the current Alarm condition has lasted and cumulative (ETM) time the float has been up since day 1.

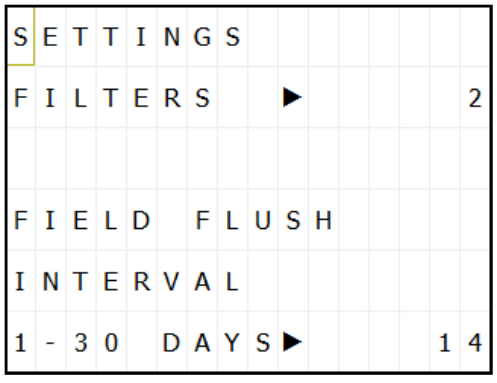
Pump Counter and ETM (Screen #7)



Screen #5

The internal run time is implemented and recorded whenever a pump is called for automatically. The run time is displayed in minutes:seconds. The pump has its own counter that indicates each time the pump is called for in the automatic mode. Each pump has its own ETM (Elapsed Time Meter) that cumulatively counts the amount of time in hours:minutes a pump has been called for.

Setting Quantity of Filters & Field Flush Interval (Screen #5)



Screen #6

Set Number of Filters: 1 or 2. Based on the hydraulic unit selected, set field flush interval (in days), default is an American Manufacturing recommended 14 day interval.

NOTE: The zone switches must be in the Off position. Settings can be changed while the program is running.

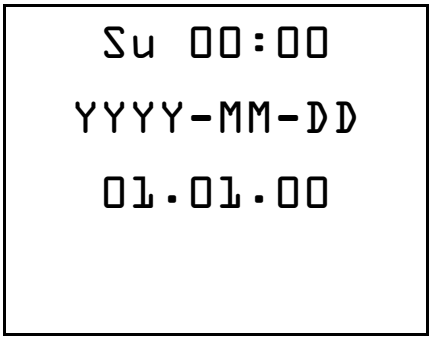
Press and **Hold** the **"ESC"** key until the value is highlighted. **Press** the **"OK"** button and 000001 appears and the underlined location will start flashing. **Press** the pointer button > to select the last location of 00000**1** for the selection of filters. **Press** the pointer button up/down to change the number from 1-2. When entries are complete **Press** the **"OK"** button. **Press** the **"ESC"** key twice and the entry will be complete. **Scroll down** with the pointer button until you reach the Settings Filters display. **Press** and **Hold** the **"ESC"** key until the value is highlighted. **Press** the **"OK"** button and 000001 appears and the underlined location will start flashing. **Press** the pointer button > to select the last location of 00000**1** for the selection of filters. **Press** the pointer button up/down to change the number from 1-2. When entries are complete **Press** the **"OK"** button. **Press** the **"ESC"** key twice and the entry will be complete.

Zone & Field Flush Counters (Screen #7)

ZONE COUNTERS		
	DOSE	FLUSH
Z 1	0	0
Z 2	0	0
Z 3	0	0
Z 4	0	0

Screen #7

The Zone and FF display monitors the Auto operation for each zone. When any zone has started an automatic dose the “DOSE” counter will be advanced one count for the corresponding zone. When any zone has had an automatic Field Flush event the “FLUSH” column will advance one count.



Screen #9

CLOCK SCREEN (Last screen when scrolling down with arrow ▼ key)

FROM THIS SCREEN ALL OTHER SCREENS ARE ACCESSED

BY SIMPLY SCROLLING UP WITH THE ARROW ▲ KEY.

Reset/ Cycle Start Button (Located above the HOA switches)

When the Reset/Cycle Start pushbutton has been depressed and held for 1+ second during a dose, the pump will stop. When the Reset/Cycle Start push button has been depressed and held for 10 (+/-) seconds then released (with all HOA switches in AUTO and adequate liquid level), the pump will start an automatic dose cycle and the elapsed rest times will be forced to reset to zero.

Program/Setting menus

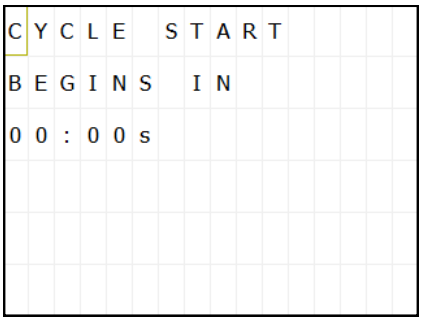
The **Program and Settings Menus should only be used with factory direction.**

Default Menu Start Instruction

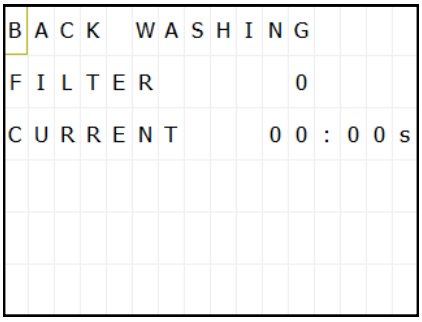
This menu appears whenever a program is stopped or no program exists. **THE PUMP "H-O-A" SWITCH(S) SHOULD BE IN THE OFF POSITION!** Press the button until you reach the **“Start”** option and press the **"OK"** button. If your LOGO! is programmed it will begin its sequences when the pump switch is placed in the “Auto” position.

WARNING!!! Programming changes should only be done by an authorized American Manufacturing representative.

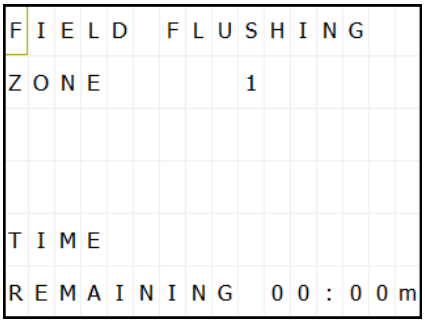
THE FOLLOWING SCREENS ARE SHOWN ONLY WHEN THE OPERATION IS ACTIVE:



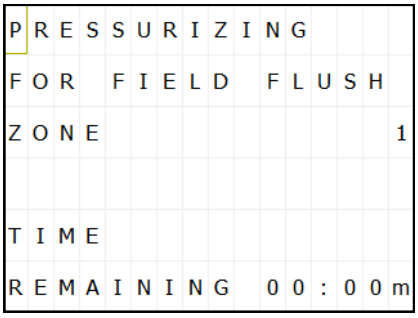
The count down for cycle start is shown when reset/ cycle start push-button is held (displayed only while holding reset button, dose starts at 10 seconds, field flush starts if held for 20 seconds)



filter back wash in progress (displayed only while back flushing filters



Field flushing enabled for next dose cycle (displayed only when next dose is field flush)



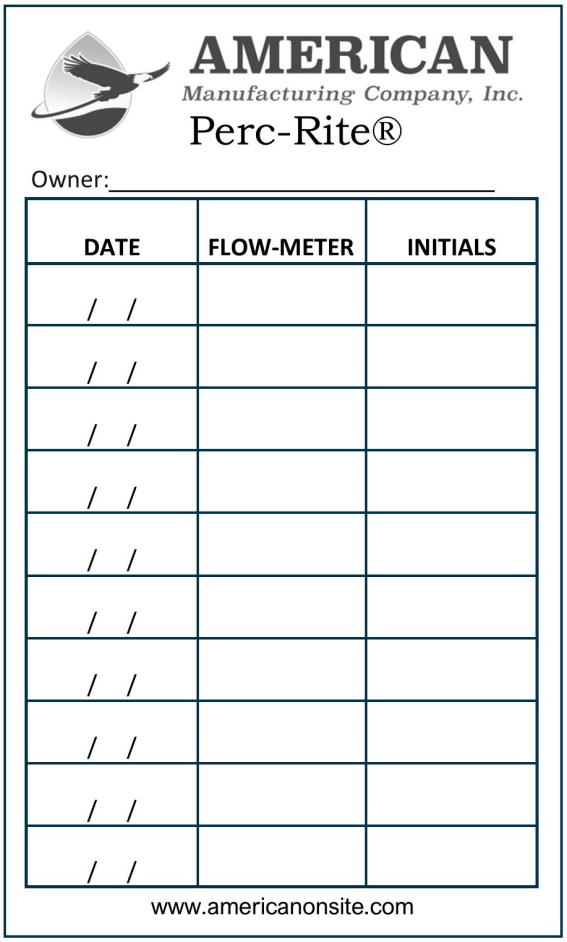
pressurizing zone for field flush (displayed only when pressurizing zone)

FLOW RECORD CARD

Flow record cards are available from American Manufacturing. As a time saver for the operator in leu of recording all internal data from the PLC, recording the flowmeter reading and date can help monitor operational trends.

By recording the flow during annual operational monitoring events, the operator may be able to pick up excessive flow conditions due to leaky toilets, leaky tanks or other excess flow conditions.

Just determine the number of days between recorded events, determine the amount of effluent discharged, and look for significant variance.



AMERICAN
Manufacturing Company, Inc.
Perc-Rite®

Owner:_____

DATE	FLOW-METER	INITIALS
/ /		
/ /		
/ /		
/ /		
/ /		
/ /		
/ /		
/ /		
/ /		
/ /		

www.americanonsite.com

DEALER NOTES;

DATA MONITORING TABLE
(COMPLETE AT STARTUP AND O&M VISITS)

NAME: _____ DATE: ___ /___ /___

Address: _____ Time: ___ : ___ AM PM

_____

Screen #		VALUE
1	Zone 1 Dosing Target (m)	
	Zone 1 Dosing Current (m)	
	Zone 2 Dosing Target (m)	
	Zone 2 Dosing Current (m)	
	Zone 3 Dosing Target (m)	
	Zone 3 Dosing Current (m)	
	Zone 4 Dosing Target (m)	
	Zone 4 Dosing Current (m)	
2	Standard Rest (h)	
	Peak Rest (h)	
	Current Rest (h)	
	Number Zones	
	Next Zone (to dose)	
3	Current Float Status	
	High	
	Peak	
	Enable	
	Off	
4	High Level	
	Counts	
	Current	
	ETM	
5	Pump Counts	
	ETM	
	Peak Counts	
	ETM	
6	Setting Filters (1-2)	
	Field Flush interval (days)	
7	Zone Counters	
	zone 1 Dose	
	zone 1 Flush (FF)	
	Zone 2 Dose	
	Zone 2 Flush (FF)	
	Zone 3 Dose	
	Zone 3 Flush (FF)	
	Zone 4 Dose	
	Zone 4 Flush (FF)	

DATA MONITORING TABLE

The table shows the internal data available to view in the PLC. The rest times and run times can be edited in the event the preset values need to be changed for a specific site.

We recommend monitoring these values in the event of observed flow variance that cannot be justified in order to troubleshoot problem.

The data may also be valuable for high usage installations where seeing problems before they occur is necessary.

INSPECTION AND OPERATION PROCEDURE
ONSITE DRIP DISPERSAL SYSTEM

NAME: _____ DATE: ___/___/___

Address: _____ Time: ___ : ___ AM PM

_____

I. Monitoring Schedule Frequency

A. Periodic Inspection _____

B. Compile and review (submit) data _____

II. Periodic Inspection

A. Field Conditions

1. Walk the field and record any visible wet spots from the drip system.
2. O.K.___ Repair___ Comments and remedial action _____

B. Controller

1. Lights and manual switch positions.
   a. Open the control panel and open the lid to the hydraulic unit and pump tank. . Make sure all manual switches are in the automatic position. With Microprocessor on, verify power light and LCD display are on.
   b. O.K.___ Comments and remedial action _____
2. Microprocessor input: See table in owners manual.
   a. O.K.___ Comments and remedial action _____
3. Microprocessor output: Verify there is output only when in automatic operation. You may start automatic cycle with "Reset/Stop" button.
   a. O.K.___ Comments and remedial action _____

C. Pump Tank Liquid Level Float Switches

1. Check liquid level in the pump tank to confirm switch operation.
   a. If a float is down, its light should be off. Note; High level alarm float requires optional relay installed in control.
2. O.K.___ Comments and remedial action _____

D. Pump and Valve Operation

1. Place pump "Hand-Off-Auto" switch in the "Hand" position to dead head pump against valves. Then open (optional) master valve. Flow meter should not turn indicating there are no leaks.
2. O.K.___ Comments and remedial action _____
3. With the pump running, place each zone valve in the "Hand" (open) position one at a time to check operation. With one zone valve open, flow should register on the flow meter. When the zone valve closes (off position), the flow should stop.
4. O.K.___ Comments and remedial action _____
5. With one zone valve open and flowing, close and reopen (optional) master valve to check operation.
6. O.K.___ Comments and remedial action _____
7. With the pump in the "Hand" position open the filter backwash valve for filter one and two for ten seconds then close. There should be no flow registering in the flow meter and you should hear the valves open and close. The backwash return valve diaphragm must open and close during backflush operation.
8. O.K.___ Comments and remedial action _____
9. Return all switches to the automatic position

E. Hydraulic Unit

1. Examine one filter and clean all filters as needed.
2. Examine all hydraulic components for leaks, tubing crimps and other problems.
3. O.K.____ Comments and remedial action _____

III. Annual Inspections (Includes Periodic Inspection)

A. Extended Check - Zone Dose Rates

1. Open the air release valve boxes and inspect. Make sure they close during the dose with no water leak after air is evacuated.
2. O.K.____ Comments and remedial action _____
3. Determine how many zones are in operation and the installed flow rates from the installation records.
4. O.K.____ Comments and remedial action _____
5. With the pump in the "Hand" position, select the first zone by placing the zone valve switch in the "Hand" position. After pressurization time, check flow rates by reading the flow meter for a timed minute. Repeat for all zones. If flow varies by more than 10% from original flow rates, reset flow rates.
6. O.K.____ Comments and remedial action _____
7. After the final zone is checked, place the "Zone Return" valve in the "Hand" position while the "Zone Valve" is still in the "Hand" position and verify that the flow rate increased to provide field flushing.
8. O.K.____ Comments and remedial action _____
9. Return appropriate switches to the automatic position.
10. O.K.____ Comments and remedial action _____
11. Press reset button for 5 seconds and check automatic zone dosing time.
12. O.K.____ Comments and remedial action _____

B. Tanks & Pumps

1. Examine and clean effluent screens, filters, and floats as needed.
2. O.K.____ Comments and remedial action _____

C. Measure solids level in all tanks

1. Septic tank Tank Depth _____ Sludge Depth _____
2. Settling Tank Tank Depth _____ Sludge Depth _____
3. Dose Tank Tank Depth _____ Sludge Depth _____
   a. Sludge pumping required Yes ___ No ___

IV. Reporting

A. Provide summary report to customer showing gallon flow to each field along with pertinent operating information and suggestions.

B. Provide signed and dated inspection report to customer file and regulatory agency as needed.

C. Have records available and be prepared to discuss operation and maintenance specifics with customer personnel.

V. Operator Signature _____ Date: _____

Perc Rite® Dealers are authorized to reproduce forms in this manual as needed for each site. Additional comments (use back of copy if necessary):

Order Information

AMERICAN MANUFACTURING COMPANY INC.
P.O. Box 97, Elkwood, VA 22718
1-800-345-3132 Fax: 540-829-1031
e-mail: sales@americanonsite.com web: www.americanonsite.com

US MAIL: P.O. BOX 97
ELKWOOD, VA 22718-0097

FREIGHT TERMS

All materials shipped f.o.b. ELKWOOD, Virginia, via UPS or common carrier. Please consult factory for freight allowances.

TERMS OF PAYMENT

With an approved credit account, terms are 2% 10 days, net 30 days from date of invoice. A 2% service charge will be applied to all past due invoices. Customer agrees to pay all reasonable collection fees incurred by American Manufacturing. All other orders will be shipped C.O.D. Deposits on some special orders may be required.

PRODUCT CHANGES

American reserves the right to change prices and modify or redesign any product without notice.

ERRORS AND CLAIMS

All shipping errors must reported within 10 days. American Manufacturing will not be responsible for damages, shortages or delays caused by shipping delays. Claims which are the responsibility of American will be expedited immediately, but are limited to credit on or replacement of merchandise involved.

AMERICAN MANUFACTURING LIMITED WARRANTY

For one year (12 months) after date of purchase, American Manufacturing 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:

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

Defective or warranted items must be returned to American or a location designated by AMC. All returns must be accompanied by a return goods authorization number (RGA) supplied by 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.

© American Manufacturing Company, Inc., 2021

NOTES:

AMERICAN MANUFACTURING COMPANY, INC.

INNOVATIVE TECHNOLOGY FOR THE ENVIRONMENTAL AGE

CATALOG PRODUCTS

American Manufacturing Company, Inc. manufactures many specialty On-Site Wastewater products including the Bull Run™ Valve, Dial-A-Flow™, Distribution Boxes, accessories and Controls. American also supplies as an Original Equipment Manufacturer (OEM) many other products unique to the On-Site Industry.

The American On-Site Products Catalog is used throughout the industry not only for purchasing but for reference and education. If an individual desires a product not shown in the catalog, a toll free call to our 800 number will normally result in getting information about the desired product.

CONTROLS

American Manufacturing becomes involved with the entire operation of the system whether potable water, process water, or wastewater. American has staff Professional Engineers, designers, soil scientists, and trained sales people with state-of-the-art experience in control systems.

Our objective is to provide the most practical, economical, and efficient control device for fluid handling. We inventory many standard application controls and are able to manufacture special application panels in a very timely manner due to our modular design and manufacturing methods.

PACKAGES

American Manufacturing Company, Inc. manufactures many specialty On-Site Wastewater system packages including Recirculation Sand Filter components, pump station equipment, and State-Of-The-Art ***American "PERC-RITE®" Drip*** units incorporating automatic field flushing, disc filter backflushing, and pressure compensating emitters.

1-800-345-3132

www.americanonsite.com