

OAKSON, INC.

Innovative Drip Dispersal, Water Re-Use, and Wastewater Products

PERC-RITE® INSTALLATION INSTRUCTIONS

Installation Sequence

1. Prepare dispersal area for installation.
2. Set septic tank, treatment unit (if applicable), and pump tank.
3. Place Hydraulic Unit and mount control panel.
4. Set float tree in pump tank.
5. Install Cool-Guide and pump.
6. Dig ditches for supply and return manifold.
7. Dig ditches for supply and return lines.
8. Install drip tubing per instructions.
9. Install loops (flex tubing) connecting ends of drip tubing.
10. Dry fit pressure lines and field manifolds.
11. Glue all fittings and place air release valve boxes.
12. Install electrical service and connections to components (and phone line to control panel if applicable).
13. Provide one day volume of clean water for start-up.
14. Flush all fields through the air release valves.
15. Pressure check all fittings and lines.
16. Find any leaks and repair.
17. 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.
18. Grade, seed, and mulch site.

Site Preparation

Protect the dispersal area from soil disturbance by heavy equipment prior to the drip tubing installation. As soon as the dispersal area has been designated, it should be flagged and roped off. No site preparation or construction work should occur if the soil is wet: i.e. ponded surface water or saturated soil to the depth of the drip tubing installation.

After the dispersal area is roped off and the soil is dry enough to install the tubing, the site should be cleared by hand of brush and small trees if necessary.

If the site requires imported fill, it must be incorporated evenly into the underlying natural soil. No sharp interface should remain between the natural and imported soil layers. Natural soil should be scarified before the imported fill is put in place. There should be no low spots or depressions, and the final shape should shed, rather than accumulate, rainwater.

Lay Out The Dispersal Area

The location of the tubing runs should be laid out with each run placed along the contour. Keep in mind that runs can vary in on-center (o.c.) typically between 1-3'. Typical spacing is 2' o.c. with a minimum recommended spacing of 1.5' o.c. (With obstructions such as trees, sheds, or gardens the tubing may be looped in a different pattern.) Note: For new construction with the reserve area between the tubing, 2' o.c. must be maintained.

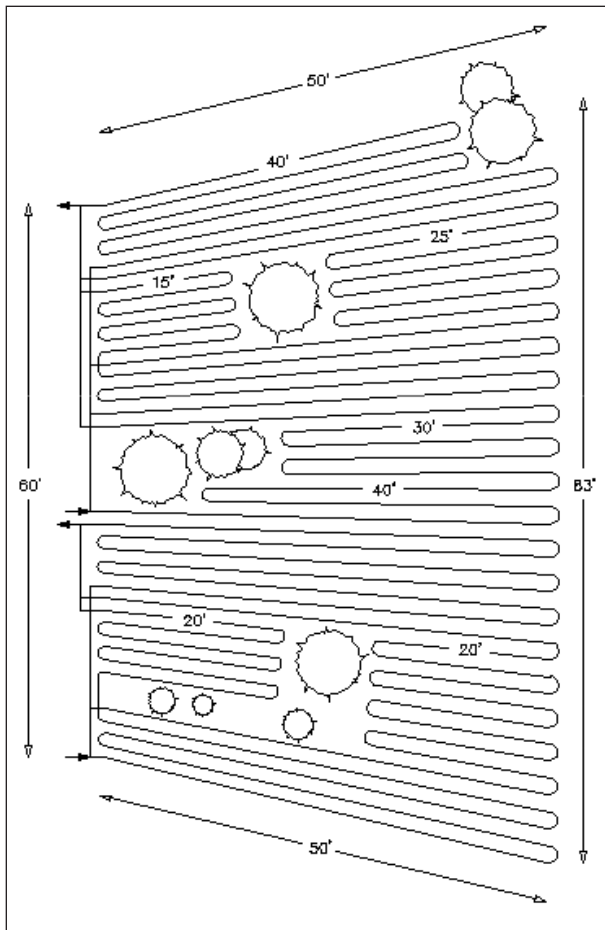
The primary goal in installing the drip field is to place the required linear feet of tubing in the ground as specified in the design plans. If an obstruction is

encountered that prevents the tubing from being placed in the ground, the tubing run may be looped back to avoid the obstruction. The other runs may need to be placed closer than the design spacing indicated to accommodate all the tubing that was intended to be placed in the ground.

Install Additional Components

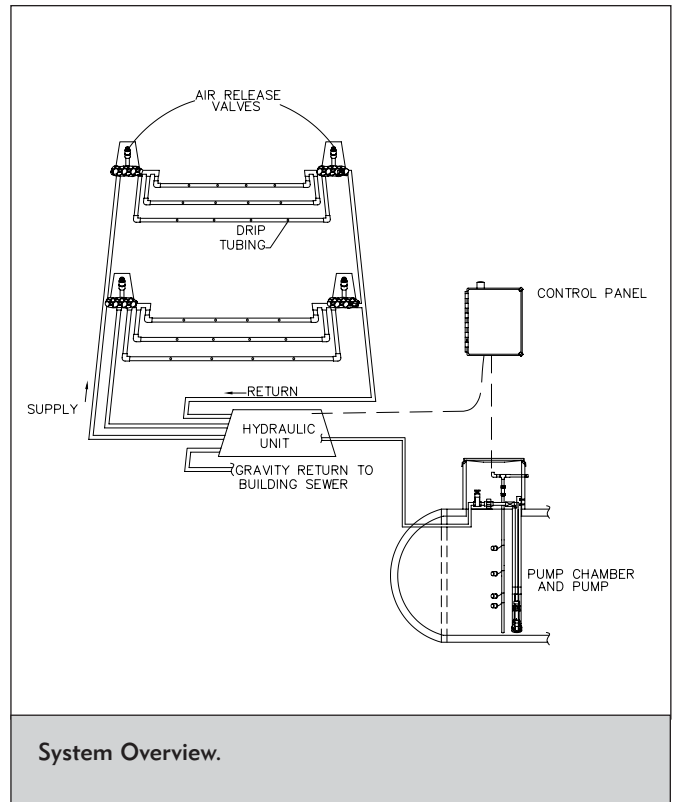
Primary (Septic) Tank/ Treatment Device (if applicable)

Install in accordance with manufacturer's instructions and design plans.



TYPICAL DISPERSAL FIELD AS INSTALLED TO AVOID OBSTRUCTIONS.

Note: variable field width, which is an acceptable practice.



System Overview.

Pump Chamber

Install in accordance with manufacturer's instructions and design plans.

Float Switches

Install the provided four-float vertical float tree (removable for adjustment).

Hydraulic Unit

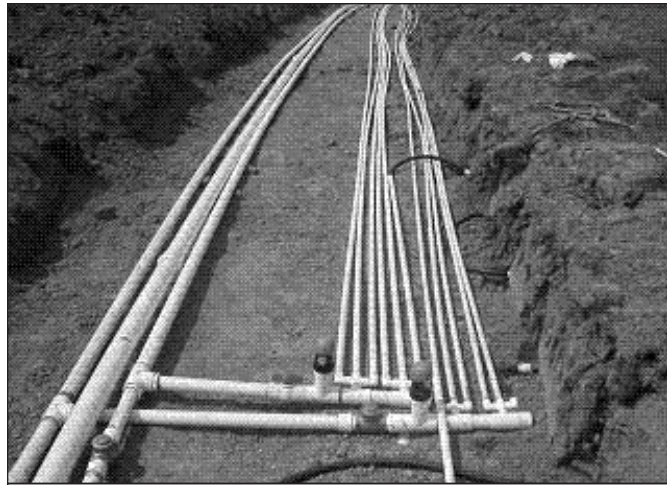
See installation sequence below.

Pump and Guide

Install and secure the cool-guide by anchor bolts in the riser and at the bottom of the pump chamber. The pump must NOT be installed with a weep hole due to the high pressure. Pump must be "hard wired" to maintain warranty. Wiring should be connected in a suitable outdoor rated junction box.

Supply & Return Pipes/Supply & Return Manifolds

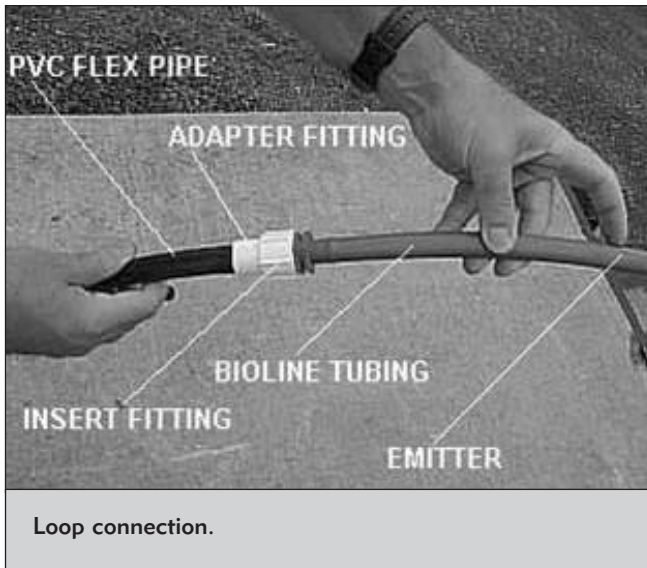
Install supply and return piping as well as the supply and return manifolds per design specifications. All cutting of rigid PVC pipe, flexible PVC, and drip tubing of size 1½” or smaller shall be accomplished with pipe cutters approved by the manufacturer. No sawing of PVC, flexible PVC or drip tubing of size 1½” or smaller is allowed. Install the supply and return piping below the frost line. Insulate any pipes entering into the frost zone that may retain liquid. Supply and return manifolds are to be laid higher than the dispersal tubing.



Large system header ditch.

Construction of the Dispersal Area

1. A typical layout of runs may be performed with a laser level and a can of spray paint as described below:
 - A. Knowing the run length (roped off earlier), the laser rod should be set at grade at the beginning of the run and the ground should be marked with paint at that point.
 - B. Move the rod along the contour keeping the rod at the same elevation.
 - C. Mark the ground with paint at 3-5' intervals to the full length of the run.
 - D. Using the paint, connect each paint mark to make a line along the run.
 - E. Repeat this procedure for each run.
 - F. Follow the paint marks with the trencher to install the tubing along contour.
2. All drip tubing is to be installed parallel with the contour and vegetative cover must be replaced for installations where it is removed or buried during installation.
3. When installing drip tubing in natural soils the tubing may be installed with a vibratory plow, a static plow, a narrow trencher (<6” width), or by hand trenching.
4. When fill is to be brought in, the installation takes place by scarifying the surface and bedding the drip tubing in clean sand, meeting requirements for fill material in Title 5 at 310 CMR 15.255(3) with cover consisting of sand and topsoil meeting the amount of cover in the design requirement.
5. Typical cover requirements range from 6-12” but the designer may indicate for the tubing to be installed up to 24” below grade.
6. The tubing should have no kinks and not be in contact with any rocks or debris.
7. Never leave the drip line or PVC lines with open ends during the construction process. Duct tape may be used to close all exposed ends when cut until permanent connections are made. Care must be taken to keep all construction debris from entering force mains, manifolds, and drip line.
8. When cutting drip tubing it is necessary to use manufacturer’s approved pipe cutters.



Loop Connections

When connecting flexible pipe (i.e. loops) to adjacent drip tubing runs, the loops should be elevated 1-2" above the drip tube as to drain to each individual run and prevent freezing. The flexible PVC should be a minimum of 12" prior to beginning the radius to the next drip line. Do not backfill until pressure testing has proven the system to be leak free.

Flexible PVC to Rigid PVC Connections

Connect drip line to flexible PVC using a "Ram Insert Adapter" at the beginning and end of each lateral. The 1/2" flexible PVC should be a minimum of 12" long. This flexible tubing connects the drip tubing to the rigid 1/2" PVC and protects the drip tubing from crimping.

Air Release Valve(s)

Install air release valve(s) on a 3-6" gravel bed and in a 6" valve box. These valves are to be installed at the highest point of the field or elevated zone returns. Each valve box is to be insulated with Styrofoam peanuts, a minimum of 1/2" rigid foam,

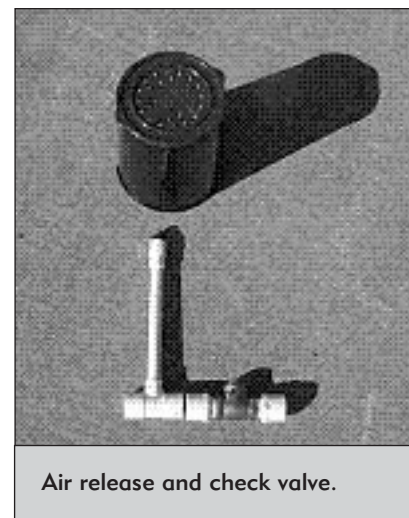
or equivalent. DO NOT INSTALL air release valves until system start-up has been completed and any debris has been flushed from the system.

Electrical Panels

There are three types of electrical control panels available:

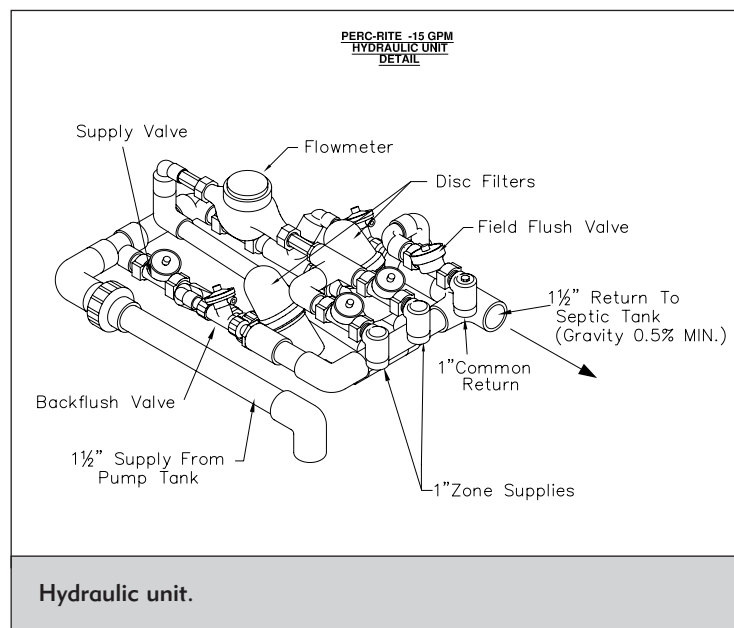
1. **Standard Control Panel** has an audio and visual alarm. This panel provides an adequate level of monitoring for most low-flow applications (<2000 gpd).
2. **Fully Monitored Control Panel** includes remote alarming via telephone dialers.
3. **Remotely Monitored and Controlled Panel** requires a dedicated phone line.

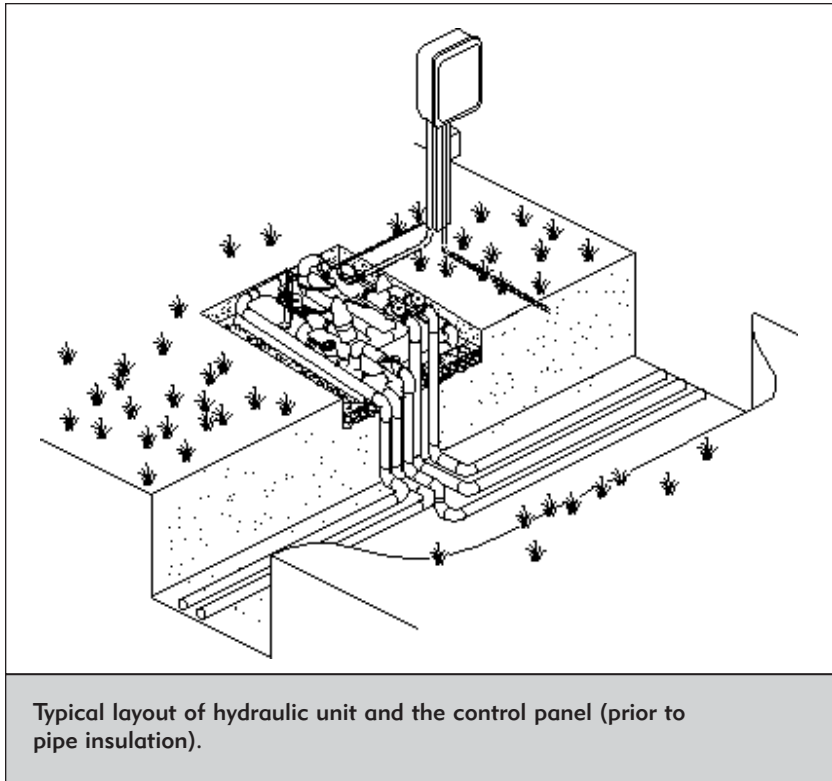
Each control panel comes with detailed wiring instructions. The panel, which is in a location accessible for maintenance, should be mounted on the building or on a permanent pedestal in an obscure location. If placed on a pedestal, it should be a 4x4" pressure-treated post, or equivalent with at least 3' 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 included with the control panel. The control wire shall be run through conduit to the control panel with no splices and be connected to the terminal strip provided. Connect the heater, floats, and pump(s) to the control panel. Conduit entering the control panel should be sealed with caulking (as recommended by the manufacturer) to prevent corrosion.



Hydraulic Unit Installation Steps

1. Determine location of Hydraulic Unit within the distance and elevation from the pump as shown on the design plan. Place the Hydraulic Unit at an elevation high enough for gravity drain back to the septic tank. A location that is open to southern exposure is preferred for warming purposes.
2. Excavate a level pad to set the Hydraulic Unit on. The Hydraulic Unit is to be placed on a level bed of 4-6" thick of $\frac{3}{4}$ - 1 $\frac{1}{2}$ " gravel for drainage. Provide positive drainage from around the Hydraulic Unit to ensure no excessive rainwater will enter. If standing groundwater is a problem in the vicinity of the Hydraulic Unit, a screened drain to daylight is required.
3. Center the unit on the gravel bed with the pipes slightly over the edge. Connect the supply and return piping and insulate with a minimum of $\frac{1}{2}$ " pipe insulation to a depth below the frost.
4. Rigid foam insulation is to be installed under the Hydraulic Unit to further protect the supply and return lines from frost.
5. Install the insulated enclosure and backfill the area making sure not to damage any piping or electrical components. Provide a minimum of 4" of backfill above the bottom edge of the enclosure to help maintain temperatures above freezing. Additional mounding is preferred for freeze protection and aesthetics. Additional rigid foam insulation may be installed under the cover of the enclosure for added frost protection.
6. All pipes entering and leaving the hydraulic unit shall elbow vertically down 90 degrees to a depth below the frost line prior to extending away from the unit horizontally. All pipes retaining liquid shall have a minimum of $\frac{1}{2}$ " insulation. Additional insulation inside the hydraulic unit is encouraged. Insulation to consist of rigid foam insulation, bagged Styrofoam, Styrofoam peanuts, or equivalent. If fiberglass insulation is used, it must be sealed to prevent it from becoming saturated.





Landscaping and Drainage

All landscaping, filling, and site drainage completed before and after the installation must be done in a manner to ensure the integrity of the dispersal area. Use of imported fill must be done in accordance with Title 5 and the local health department. Gutter and down spout drains should be directed away from the system.

The entire area should be planted with grass in order to prevent erosion. The soil should be properly tilled, limed (if necessary), and fertilized before planting. After applying an appropriate grass seed, the area should be heavily mulched with straw or other suitable material. Dense vegetative cover is to be established over the supply trench, return trench, and drip tubing prior to the first exposure to freezing temperatures. If

vegetation cannot be established, then trenches and tubing are to be covered with a thick layer (minimum 6") of mulch, straw/hay, etc. until such turf cover can be established.

Return Pipe to the Septic Tank

The 1-1/2" Schedule 40 PVC return pipe from the Hydraulic Unit to the septic tank is to be laid with a gravity feed of 2% slope to the septic tank or else a check valve is required to prevent backpressure on the field flush valve in the Hydraulic Unit.

Start up

An Oakson representative should be given appropriate notice prior to system start-up. The representative shall be onsite during start-up to make adjustments to the control panel, observe for proper flow through the flow meter, and observe for leaks in any piping. Once the tanks, pump(s), supply and return lines, Hydraulic Unit, control panel, manifolds, and drip tubing are in place and connected, a leak test must be performed prior to backfilling.

General Construction Specifications

Gravity Piping — All gravity piping shall be Schedule 40 PVC 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-Drip Line Pressure Piping — All non-drip line pressure piping shall be Schedule 40 PVC pressure rated. Rigid piping shall be for use with solvent welded Schedule 40 fittings. Flex piping shall be PVC flex pipe for use with pressure rated fittings.

General Valves — All gate, ball, globe, and check valves shall be Schedule 40. 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 quick disconnects inside the pump chamber shall be Schedule 80 PVC unions.

Pipe Bedding — In-ground piping shall be installed according to local codes. Piping shall be installed on original soil, suitably compacted fill, or gravel-bedded excavations on original soil.