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INSTALLATION, MAINTENANCE AND TROUBLESHOOTING

Installation

Installation of low-volume irrigation components, while slightly different from conventional-system installation, is a straight forward process. The following steps define a typical low-volume installation.

1. Analyze the site. Compare the site to your irrigation plan and note any obstructions or discrepancies. Modify your plan to reflect actual site conditions.
2. Locate or mark components. Use chalk or flags to mark the locations of valves, trenches, etc.
3. Plant large-specimen plant material.
4. Install and set up backflow devices to meet local codes.
5. Trench and lay main line to the control zone.
6. Pressure test the main line.
7. Set valve boxes and install control zone components.
8. Flush the valves.
9. Run lateral PVC pipe or high density polyethylene pipe to riser units. Each riser unit includes the fittings necessary to connect a 1/2" schedule 80 riser to the poly drip tubing (typically a compression elbow or tee).
10. Backfill trenches and rough grade.
11. Plant shrubs and trees.



12. Layout XT-700 poly drip tubing or Landscape Dripline using fittings as needed. Warm the tubing in the sun before installing to make it more flexible. Don't pull tubing too tight; allow for expansion and contraction due to changing weather conditions.
13. Flush the line to remove debris.
14. Attach emission devices.
15. Staple XT-700 poly drip tubing or Landscape Dripline to grade.
16. Finish grade.
17. Plant ground cover.
18. Operate system for approximately two weeks, checking for correct operation of all emission devices.
19. Flush system to remove any debris.
20. Mulch to cover system components and conserve water.

Maintenance and Troubleshooting

There is a common misconception that low-volume irrigation systems require far more maintenance than conventional irrigation systems. In fact, the conventional systems also require substantial maintenance to keep them operating optimally. However, conventional systems tend to be more “forgiving” of poor maintenance practices. Since the entire area is being irrigated, it is more likely that individual plants will be able to survive a poorly adjusted system.

In low-volume irrigation, each plant receives only as much water as it actually requires. As a result, a clogged emitter or similar problem can cause extreme stress to the plant that relies on that emitter for its water needs.

While the amount of maintenance for a low-volume system will not differ much from conventional systems, the type of maintenance will. In a conventional system, regular site reviews and system checks can determine problem areas fairly easily, but once a problem is found, it may be quite difficult to repair.

In a low-volume system, maintenance is more detail-oriented. Filters must be cleaned on a regular basis, depending on the water source being used. Site reviews require close scrutiny for signs of plant stress caused by a clogged emitter. However, once a problem is found, it can generally be fixed on the spot. Table 10-1 outlines the recommended maintenance for low-volume systems. Table 10-2 includes a list of common system problems and their typical causes and solutions.

TABLE 10-1: RECOMMENDED MAINTENANCE

Interval	Action
Design/Installation phase	Consider accessibility of valves, filters, and emission devices to maintenance personnel. During installation, make sure components are placed for easy access. Completely flush the system prior to operation to remove all debris. Be especially careful to keep pipe shavings and burrs from rigid PVC tubing out of the lines.
After two weeks of operation	Inspect and clean all filters. Establish a cleaning schedule based on the amount of debris found during inspection. Perform walk-through inspection for signs of plant stress. Run system and carefully check each emission device for proper operation. Listen for running water that could indicate breaks in lines. Flush lines and look for signs of debris in water. Debris or suspended matter in the water could indicate breaks in the lines or failed filters. If no breaks or damaged filters are found, consider replacing filters with finer mesh screens. Adjust emission devices to assure that wetting patterns are within plant root zones. If wetting pattern can be seen on top of soil, be sure that it overlaps the base of the plant to provide leaching of salts away from the plant.
Every 1-2 months or as needed based on experience	Examine and clean all filters. Replace filter screens if necessary. Perform a walk-through to look for signs of plant stress. Check all emission devices for location and flow. Adjust, clean, or replace emission devices as required.
Twice per year or more frequently if poor water quality	Flush all lines. Examine water sample for signs of debris and suspended matter. Flush until water runs clear (should take only a few seconds).

TABLE 10-2: TROUBLE SHOOTING

Problem	Potential Cause/Solution
Valve does not operate properly.	- Wrong valve selected, flow too low. Replace with correct size Xerigation Control Zone. - Valve diaphragm is contaminated. Clean or replace diaphragm. - Solenoid faulty or wire severed. Check wiring. Repair or replace solenoid.
Emission device has uneven or no flow.	- Line severed upstream of emission device. Check for breaks and repair. - Filter clogged or inadequate. Check, clean, or replace filter. - Emission device clogged or faulty. Replace emission device. - Pressure too high or too low. Check pressure regulator to assure flow compatibility. - Too many emission devices on one line or line sized improperly for flow. Check and correct.
Emission device flow is too high or too low.	Check to make sure emission device is not installed backwards. Remember, the pointed end of a Xeri-Bug or PC Module is the inlet.
Poly drip tubing comes out of fittings when line is pressurized.	- Fitting improperly installed, or wrong size fitting has been used. Check and replace. - Pressure too high because regulator is not matched to flow.
Emission devices come loose from tubing.	- Emission device installed improperly. Emitter punch tool creating holes that are too big resulting in emitters that are loose. - Pressure too high. Check pressure regulator to assure flow compatibility and whether installation is in correct direction. - Faulty or worn hole punch. Replace bad section of tubing and use Xeri-Tool to insert XB emitters with self-piercing barbs so that maximum retention strength is obtained.
Plants appear stressed.	- Tubing stake was not used and point of emission has been moved away from plant root zone due to maintenance. - Emission device at plant is clogged. Clean or replace emission device. - Filter is clogged and preventing flow. Clean or replace filter. - Check for and repair breaks in 1/4" or 1/2" line upstream of the emitter. - Run time inadequate for plant and/or time of year. Recalculate water requirement and schedule. - Controller faulty or off. Check controller and reset, repair, or replace.