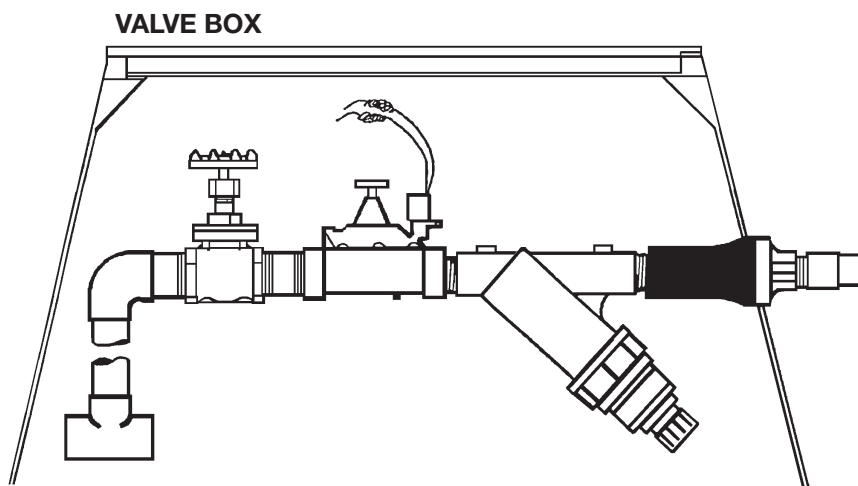


DRIP/LOW VOLUME IRRIGATION GUIDE

Drip Irrigation - also termed as micro, low-flow, low-volume or trickle irrigation - is the frequent, slow and even application of water, at low pressures, directly to the root zones of plants and trees. Used extensively in agriculture and commercial landscape for over fifteen years because of its many advantages over "high flow" irrigation systems, drip technology has grown extensively during the last decade, due to decreasing water supplies, with new products being developed every year. The concept of drip is simple, yet careful planning and attention to detail is required to design, install and maintain an efficient system. The major component parts include automatic/manual valves or garden valves, pressure regulators, filters, polyethylene tubing, fittings, and emitters.



Controller:

Although drip systems can be manually operated, for maximum efficiency an automatic controller can be connected to the system. It is necessary, however, to monitor the irrigation schedule and maintain the equipment. The selected controller should have capacity for more valves than are currently required by the system in case expansion is necessary.

Pressure Regulators:

Drip systems must operate at low pressures to ensure the proper functioning of emitters and to protect tubing and fittings from high pressures - recommended between 10 to 30 PSI. Both pre-set and adjustable regulators are designed to reduce incoming water pressure as well as regulate downstream pressure at a constant level.

Filters:

All drip systems require some type of filtration at the "head" in order to protect the emitter orifices from clogging. Various types of filters are available but screen filters with 150 mesh screens are best suited.

Tubing:

Polyethylene tubing - a flexible plastic material - is most often used for drip systems because of its many advantages. Emitters are connected directly to the tubing. It is easily punched (for emitter installation), easy to repair, inexpensive and resistant to damage caused by UV rays so that it can be laid directly on the surface.

Fittings:

Compression-type fittings are used to connect polyethylene tubing. With a simple wrist action, tubing is "walked" into the fittings for a very tight fit. No tools, glue or clamps are required.

Emitters:

Although emitters vary in type and form, they all operate under reduced pressure to deliver water at a constant, even rate of flow - measured in gallons per hour. Emitters may differ in how they regulate water output - but they should deliver water at a predictable rate and resist clogging, or incorporate self-flushing features. Some emitters force water through labyrinth paths or turbulent

spirals; others create a vortex effect and emit water from the low-pressure at the vortex center; and some use flexible diaphragms.

Emitters are also categorized as "pressure compensating" and non-compensating". Compensating emitters - which usually include the diaphragm type - are designed to deliver the same amount of water over a fairly wide range of tubing line pressures, from 10 - 40 PSI. Non-compensating emitters increase or decrease output as line pressure is increased or decreased.

Retrofit Systems:

For existing sprinkler irrigation systems, water-efficiency can be dramatically increased by replacing sprinkler heads with specially designed drip emitters, sprayers or foggers.