



DRIP IRRIGATION

PLANNING & INSTALLATION GUIDE

Dripdepot

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BASICS OF DRIP IRRIGATION

A question we receive often from potential customers is: "Why should I use drip irrigation?" Listed below are the benefits of using a drip irrigation system.

- ✓ **Save Water** : Drip irrigation will save you water. With drip irrigation you are administering water at the root zone of each plant. This water is absorbed into the soil and then by the plant. This eliminates "spray" watering devices like sprinklers, which can not precisely place the water where it is most needed. Overhead watering practices not only sees a lot of water lost to evaporation before it even reaches your plants, but also creates more run off and waters more area than just the plants root zone.
- ✓ **Save Time** : After the initial time investment of setting up your drip irrigation system you will experience the joy of having your plants watered without you doing so by hand. Any gardener that has had to water by hand knows what a large time commitment it is. A drip irrigation system with a timer can take care of your plants water needs without you being there. This means that you can go on vacation without worrying about your plants or if your neighbor will remember to water them.
- ✓ **Save Money** : Since a drip irrigation system will significantly reduce the amount of water needed to water your plants or garden, it will save you money. More and more cities are instituting water restrictions and/or raising the price of water. The sooner you start using drip irrigation the more money your drip irrigation system will save you.





✔ **Less Weeds** : As mentioned before a drip irrigation system places water at the root zone of the plant you want watered. The added benefit to this is that the surrounding area around your plant will be dry and this will limit weeds from growing there. A sprinkler would wet the whole area around your plant supplying enough surplus water for weeds to grow as well. Drip irrigation again saves you time by not having to pull weeds from your flower beds or garden.

✔ **Increased Crop Yield** : Studies have been done showing that drip irrigation creates ideal growing conditions for plants. This is accomplished by supplying them with a constant water source at the roots that results in less stress to the plant and in-turn plants thrive and produce higher yields.



PLANNING AND DESIGNING A SYSTEM

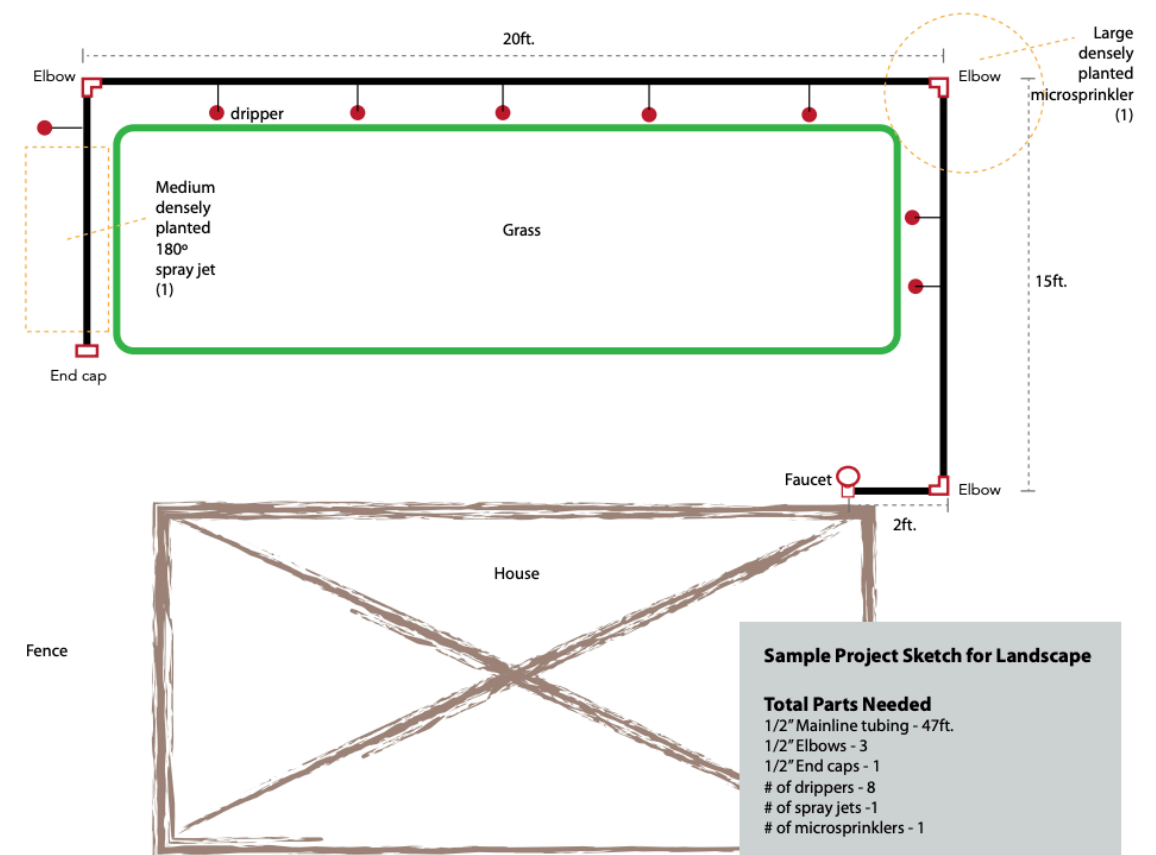
BASIC QUESTIONS TO ASK

With any project, the more prepared you are, the more benefits you will reap when finished. Creating a drip irrigation system is no different. A little homework will ensure that you get all the right parts needed the first time. The best way to start planning your drip irrigation system is by sketching out the area you wish to install drip irrigation in. While doing this pay particular attention to the following items:

- What is your water source?
- How far is your water source from the last plant you wish to water?
- What type of plants do you wish to water (vegetables, shrubs, trees, etc)?
- How many plants do you need to water?

MAKING A SKETCH

See example of a diagram below on how to create a sketch. With your sketch in hand and answers to the previous questions, you are ready to start planning your system. The rest of the guide gives you information on the parts you need to complete your system and the options that will suit your needs best.



SIMPLE RULES TO KEEP IN MIND

1/4" Tubing 30/30

What this means is that a single run (length) of 1/4" tubing cannot exceed 30 ft. and cannot be asked to supply more than 30 gallons per hour (GPH).

1/2" Tubing 200/200

This rule says that a single run of 1/2" tubing cannot exceed 200 feet and cannot supply more than 200 GPH.

3/4" Tubing 480/480

A single run of 3/4" tubing cannot exceed 480 feet and cannot be asked to deliver more than 480 GPH.

1" Tubing 960/960

This rule says that a single run of 1" tubing cannot exceed 960 feet and cannot supply more than 960 GPH.

When planning your system, run length of your tubing is not the only consideration in this equation. Total gallons per hour (GPH) must also be considered. Next is quick explanation on how to calculate gallons per hour (GPH).

Bill had 100 drippers on his drip irrigation mainline. He has forty 0.5 GPH drippers, forty 1 GPH drippers, and twenty 2 GPH drippers.

How many GPH (Gallons per Hour) is Bill using?

$40 \times 0.5 \text{ GPH} = 20 \text{ GPH}$ $40 \times 1.0 \text{ GPH} = 40 \text{ GPH}$ $20 \times 2.0 \text{ GPH} = 40 \text{ GPH}$

Total

= 100 GPH

With this information, Bill knows that he can not use 1/4" tubing as his mainline but he could use one run of 1/2" or larger tubing.

If you exceed the GPH for the mainline tubing you wish to use, you have 3 options:

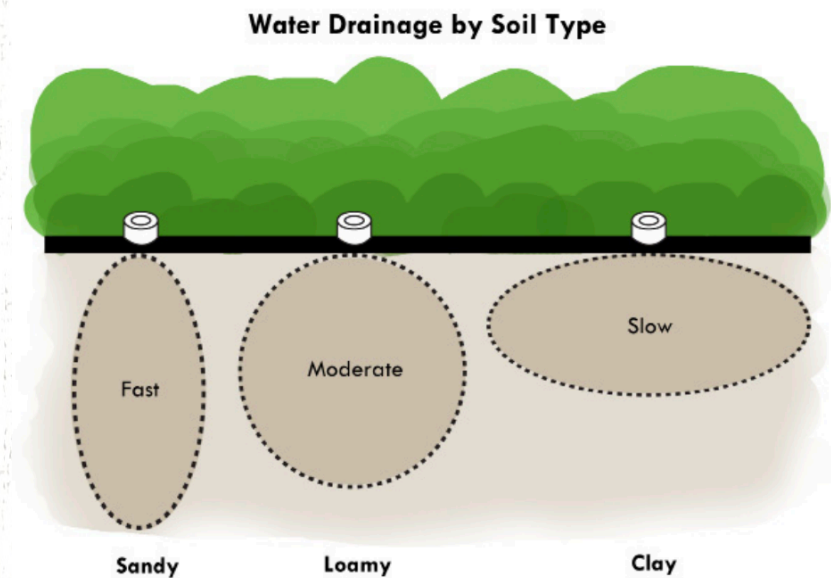
- 1. Use less drippers to reduce the total GPH.
- 2. Use drippers with a smaller GPH output (i.e. swap 2 GPH for 0.5 GPH).
- 3. Split the system into two or more zones.

Here are a few tips to **Plan the Perfect Drip Irrigation System**:
<https://help.dripdepot.com/support/solutions/articles/11000044426-planning-your-drip-irrigation-system>



SOIL TYPES

When putting together your drip irrigation system, it is useful to know what type of soil you have in your planting area. You do not need to be a soil expert, but you should be aware that water moves differently and creates different wetting patterns through the different types of soil: sand, loam, and clay. The term wetting pattern refers to the way that water is distributed below the surface of the soil both vertically, through the force of gravity, and horizontally, through the capillary properties within the soil.



Sandy Soil : Water moves quickly through sandy soil which doesn't allow water to travel far from the dripper. The wetting pattern is much more vertical than horizontal in this type of soil. If your soil is sandy then you may want to use higher flow drippers and drippers that are spaced closer together to ensure your plants receive enough water. With a higher flow, you may also want to water for shorter durations, but more often.

Loamy Soil is more dense than sandy soil so water will travel slower allowing it to spread more evenly through the soil both vertically and horizontally. Mid-range drip emitters may be a good choice and you can space drippers farther apart since the wetting pattern will be larger.



Clay Soil is very dense, which causes water to be absorbed very slowly. Drippers with the slowest flow rate are a good choice to prevent the water from pooling on the surface of the soil near the plant. Any water at the surface of the soil could eventually be lost to evaporation or runoff to areas you don't wish to water. With lower flow rate drippers, you should water for longer durations to ensure your plants receive enough water.

How do you determine your soil type? For most people an adequate way to get you in the ballpark would be to grab a handful of dry soil from the area or areas you wish to drip irrigate. Make a fist while holding the dry soil in your hand, then open your fist. If you have sandy soil the soil in your hand will crumble without hesitation. If the soil holds together but slowly falls apart then you have loamy soil. Lastly, if the soil holds its shape after being molded into a ball, then you have clay soil. This is not scientific but works well for most people. If you need or want a more detailed result, there are agencies that can test your soil for you.

COMPONENTS OF A DRIP IRRIGATION SYSTEM

Any drip irrigation system begins at the water source. For the majority of our customers this is a faucet outside their home. There are other water sources like rain barrels and ponds. This guide is based on starting a drip irrigation system from a standard garden hose threaded connection. If you can get your rain barrel or pump to standard garden hose threads then you can follow the information outlined below.



HEAD ASSEMBLY PARTS

The following parts make up what is referred to as the head assembly. Parts are listed in order of assembly:

Timer (optional) is recommended as it truly makes your drip irrigation system hands free and efficient. Also during the heat of the summer, it is best to water plants early in the morning and after the sun goes down. You can set your timer to do this while you are sleeping. Timers save you water and money by eliminating human error. Manually turning your system on and off may work for some but there will undoubtedly be a time that you either forget to turn the water on or off. A timer eliminates human error which results in happier plants and less water wasted.



Back-flow Preventer also known as a *vacuum breaker*, works to block water in your drip irrigation system from flowing back into your drinking water. Many municipalities require that a back-flow preventer be used when installing a drip irrigation system. A back-flow preventer is not designed to be used under constant pressure, which means that you can not run your drip irrigation system 24 hours a day. This is the first item attached to your faucet when a timer is not used. If timer is used in your drip irrigation system then the back-flow preventer follows the timer.



Filter is recommended even for "clean" water sources as there is still small debris that if left to run through your drip system can cause blockage in drip emitters. Our filters come with a screen that is removable for cleaning. Drip systems are like everything else in that they do require maintenance from time to time. We highly recommend taking the screen out of your filter to check for build up and give it a cleaning if needed. The regularity of inspection will depend on your water source (i.e. the dirtier the water the more often you should check your filter).



Pressure Regulator : Most drip irrigation parts are designed to work optimally at 25 PSI. Some items like drip tape require less pressure and operate best at 15 PSI or less. Pressure regulators regulate the pressure in your system to help all the watering devices throughout the system work without issue. Drippers tend to spray instead of drip when the pressure in a drip irrigation system is too high. Pressure regulators also keep drippers and barbed fittings from blowing off your mainline, which can happen if you have too much pressure. Not to mention that drip tape will rupture with too much pressure.



Head Assembly For 1/4" Tubing

Faucet > Timer (optional) > Back-flow Preventer (Vacuum Breaker) > Filter > Pressure Regulator > Tubing Adapter with 1/4" Barb



Head Assembly
with Inline filter

Tubing Connection : The final piece in your head assembly is going to be your tubing adapter. This fitting allows you to connect your mainline tubing to your water source. We sell various sizes of mainline tubing to fit different needs. The three most commonly used sizes of tubing are: 1/4" , 1/2", and 3/4". You need to select the adapter that matches with your choice for mainline tubing. The next section goes more in depth about tubing sizes and limits.



Head Assembly for 1/2" Tubing

Faucet > Timer (optional) > Back-flow Preventer (Vacuum Breaker) > Filter > Pressure Regulator > Tubing Adapter with 1/2" Barb



2 Zone Head Assembly For 1/4", 1/2", and 3/4" Tubing

Faucet > Timer (optional) > Faucet Y Connector with Double Shut-off > 2 Back-flow Preventers (Vacuum Breaker) > 2 Filters > 2 Pressure Regulators > 2 Tubing Adapters



2 Zone
Assembly with Y
connector

If you need help setting up a two zone head assembly, here is our video on "**How to Install a 2-zone Head Assembly**"

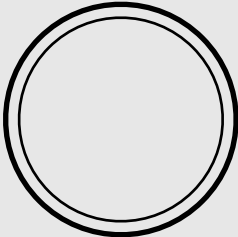
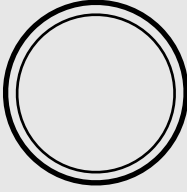
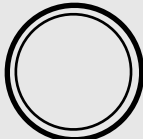




<https://youtu.be/LzS0c1hRiYA>

MAINLINE TUBING

Tubing Size Specifications

Drip Depot carries several different sizes of tubing (1/4", 1/2", 3/4", 1"). All can be used as your supply or mainline tubing. So how do you decide on which size to use? This is where the home work you did in the beginning of the guide helps. Each size of tubing has limitations.

	1" Poly	3/4" Poly	1/2" Poly	1/4" Poly	1/4" Vinyl
Actual Size					
Outside Diameter	1.200"	0.940"	0.700"	0.250"	0.245"
Inside Diameter	1.060"	0.820"	0.600"	0.170"	0.156"

Below is a chart showing the limitations which are run length and maximum Gallons Per Hour for each tubing size.

Tubing Size	Max Run Length	Max Gallons per Hour
1/4"	30 feet	30 GPH
1/2"	200 feet	200 GPH
3/4"	480 feet	480 GPH
1"	960 feet	960 GPH

So what does max run length mean? It means that when planning your drip system it is imperative to know what the distance is from your water source to your last plant. If the distance from your water source to last watered plant is 50 feet. Then you could not use 1/4" tubing as your main line. You could use 1/2" or larger. This also means that if you really want to water all you plants from one run of tubing and the distance spans 350 ft. Then your only option is 3/4" or larger tubing.



When choosing a supply line, one also has to consider how many gallons per hour you will run through your system. To figure this out you will need to do a little math. The first place to start will be to take into account how many plants you wish to water. Generally, each plant represents a drip point, i.e. a spot where you may place a dripper. For larger plants you may need to place multiple drippers at each plant.

Let's look at an example that is similar to the example given earlier in the section: Rules to Remember.

What is the total GPH that will be used?

20 x 0.5 GPH	= 10 GPH
40 x 1.0 GPH	= 40 GPH
40 x 2.0 GPH	= 80 GPH
<hr/>	
Total	= 130 GPH

Can Jim use 1/4" tubing as his mainline?

Jim cannot use 1/4" tubing as his mainline because his gallons per hour (130) is greater than the maximum allowed for 1/4" tubing, which is 30 GPH.

If Jim needs a single run of tubing to span 180 ft, what mainline tubing can he use?

Jim could use either 1/2" mainline tubing or 3/4" mainline tubing as both have maximum run lengths greater than 180 ft.

What about a 325 ft. single run of tubing?

If Jim wants to have a single run length of 325 ft. Then he must use 3/4" mainline tubing as it is the only tubing that allows for a run length of this distance.

If you know the total distance that you want a single run of tubing to be along with the total GPH you wish to run through your system then selecting your supply line tubing is easy.

Two things to keep in mind when selecting mainline tubing:

1. The overall distance from water source to last plant.
2. The total flow (GPH) your system requires.

MICRO-TUBING

Micro-tubing is a name given to tubing that is 1/4" or smaller. We sell 1/4" and 1/8" micro-tubing. However, 1/8" tubing is rarely used for anything other than commercial nursery applications and conversion drip manifolds when retrofitting existing sprinkler risers. When using micro-tubing, we recommend 1/4" and it is what we include in our kits. Why use micro tubing? It is useful for running lines away from your mainline tubing to plants that are too far away to be watered directly from the supply line tubing. This is sometimes referred to as feeder line. Mainline tubing can be used for this but micro-tubing is less expensive and works great as long as the run is not over 30 feet in length. To attach micro-tubing to your mainline tubing, you will need a 1/4" hole punch and 1/4" barbed connectors. After punching a hole in your mainline, you can insert the connector into your mainline tubing. The remaining end of your connector will be covered up with your micro-tubing section that will be cut to the length needed to reach your plant.



Connect tubing using a 1/4" connector

How To Connect Micro-tubing Into Mainline Tubing

Punch a hole in your 1/2" or larger mainline tubing with one of our punches specially designed to ensure an accurate size hole.

Insert one end of the 1/4" barbed fitting into the end of the 1/4" micro-tubing.

Once complete, insert the other barbed end of the fitting into the punched hole in the 1/2" mainline tubing.

When you hear the 'snap', you are done! Click the video to view how.

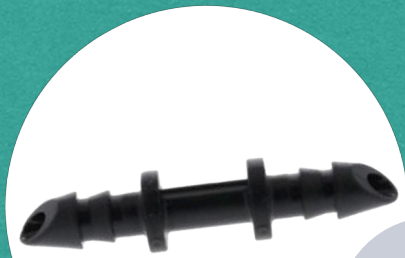


<https://youtu.be/Zmg-KlzOQYQ>

FITTINGS

Fittings are used to connect pieces of tubing together whether that be like sizes or 2 different sizes of tubing. The most common fittings and their uses are described below:

Couplings are used to connect 2 pieces of tubing together. This could be to extend a run of tubing or repair a damaged section of tubing by cutting out the bad spot and joining the two good sections together with a connector.



1/4"
Barbed
Coupling



Perma-loc
Coupling

Tees are used to create two runs of tubing in opposite directions. They can also be used to repair tubing or to attach a smaller size of tubing to a large one.



1/4"
Barbed
Tee



Perma-loc
Tee

Elbows are used to make 90 degree turns in runs of tubing when needed. They can also be used to repair tubing or to attach a smaller size of tubing to a large one.



1/4"
Barbed
Elbow



Perma-loc
Elbow

Crosses are used to create 4 separate lines of tubing. They can also be used to repair tubing or to attach a smaller size of tubing to a large one.



1/4"
Barbed
Cross



Perma-loc
Cross



TYPE OF FITTINGS

Perma-Loc Fittings are very durable and reusable. Most fittings are not reusable and because of this, we highly recommend the Perma-loc fittings as configurations of systems do change over time. Perma-loc fittings are available for 1/2" and larger tubing. Every Drip Depot kit that has 1/2" or 3/4" tubing includes Perma-loc fittings to ensure maximum flexibility when putting together your system.



Perma-loc
Connector

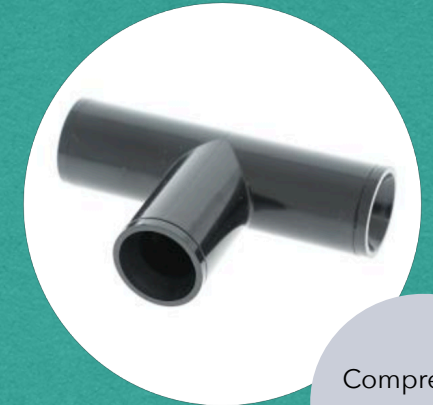
Click here for [How To Extend or Repair a Section of Drip Irrigation Tubing](https://www.dripdepot.com/how-to-extend-or-repair-a-section-of-drip-irrigation-tubing).



www.dripdepot.com

<https://youtu.be/8FuBM5r33NA>

Compression Fittings are a one time use fitting. In some cases they are less expensive than Perma-loc fittings but the draw back is that once the tubing is pushed into the fitting it can not be removed. Compression fittings require a fair amount of muscle to get the tubing inside the fitting.



Compression
Tee

Barbed Fittings are the least expensive fitting. They work well but they are a one time use fitting like compression fittings. This limits system flexibility in the future.



Barbed
Connector

For more tips for selecting the right fittings for your project, check out our **[Fitting Buying Guide](#)** to find more.

www.dripdepot.com

WATERING DEVICES

There are many types of watering devices to incorporate into your drip irrigation system. We will briefly describe each type along with its common uses.

Button Drippers are the most common and most widely used watering device in drip irrigation. These are easy to install. The drippers come with a 1/4" barb that can be inserted directly into the ends of 1/4" tubing (no tubing punch is needed for this). Or they can be inserted directly into 1/2" or larger tubing with the help of a tubing punch.



Button drippers offer a single water point, which means that they are designed to water a single plant. Often each plant gets their own button dripper. If the plant is large or water hungry then multiple drippers may be needed. Button drippers come in an array of GPH ratings.

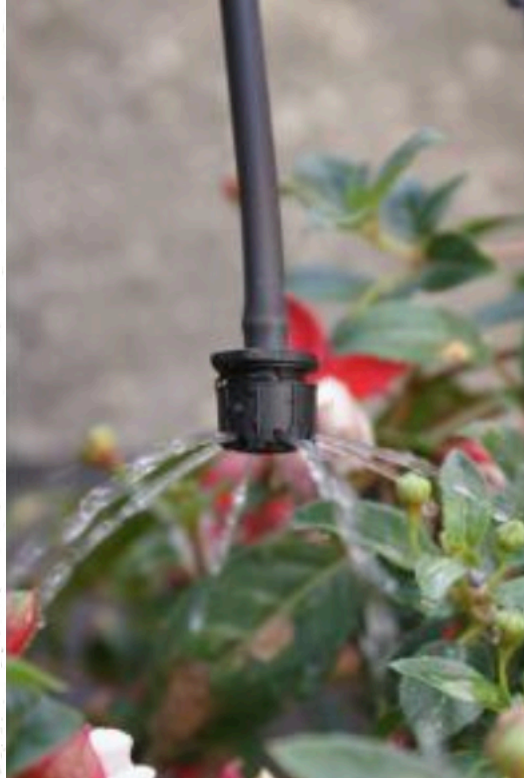
Some button drippers are cleanable. This means that the cap can be screwed off and any debris that is clogging the dripper can be cleaned out.

Pressure Compensating vs. Non-Pressure Compensating

Pressure compensating or PC is a term used to describe an emitter that maintains the same output at varying water inlet pressures. Therefore PC drip emitters compensate for uneven terrain, length of supply tube and varying inlet flows to ensure each drippers is dripping at the stated GPH output. All of our drip irrigation kits that receive button drippers come with pressure compensating drippers. A non-compensating drip emitter will have a small variance of output flow. Therefore the flow will vary along uneven terrain, and each dripper will emit a different amount of water albeit a small difference depending on its location on the supply line. The pressure to a drip emitter can vary due to the slope of the land and the length of the supply tube. If an irrigation system is installed down a slope, there will be higher water pressure at the bottom of the slope than at the top, and non-compensating drippers at the bottom will emit more water than those at the top. PC drip emitters will emit the same amount of water all the way down the slope, providing more even watering on uneven terrain.



Adjustable Drippers are emitters that allow for the flow rate of the dripper to be adjusted. These drippers are great in potted plants and near young plants. As a young plant grows the water output of the dripper can be increased to fit the plant. Adjustable drippers are good for areas where you may need to adjust flow rate often or an area that needs a lot of water. These drippers are used in hanging baskets and containers. A special note to consider when planning a system and using adjustable drippers is that it does not take many drippers at 10 GPH or 20 GPH each to over tax a system.



Flag Drippers function much like a button dripper. They can be inserted into 1/2" or larger tubing with the help of a tubing punch. The flag dripper can water a plant directly from the mainline tubing. You would just attach a section of 1/4" tubing on the last remaining orifice and run the 1/4" tubing away from the flag dripper to the plant to be watered. The flag dripper in this setup is used to control the gallons per hour at the plant being watered from the mainline tubing. Flag drippers are cleanable and come in various GPH ratings.



Spray Jets are normally used in landscape situations that call for overhead watering like flowerbeds, shrubs or groundcovers. Spray jets consume a lot of water and it is best to limit the number in your system. Spray Jets come in a variety of spray patterns including 90, 180 and 360 degrees. Match the spray pattern to the area that you wish to water. The 180 and 90 degree pattern are useful around fences, up against houses or at the edge of flower beds. You can purchase spray jets already on risers or without risers. We recommend installing spray jets at least 6 inches of the ground. Spray jets differ from micro-sprinklers in that they provide a finer spray than the large drops of water provided by micro-sprinklers.

Micro-sprinklers spray water in a 360 pattern and are useful in landscapes and overhead watering situations such as: flowerbeds, shrubs, or groundcovers. Micro-sprinklers deliver larger drops of water and can provide higher flow rates (GPH) than spray jets.

Note: micro-sprinklers can eat up a lot of GPH in your system so it is best to limit the number that are installed in your drip irrigation system. If you wish to run a lot of micro-sprinklers, we recommend using 3/4" tubing.



Drip Tape has built-in emitters available in various flow rates and emitter spacings. The tape comes flat but when pressurized the tape becomes round. Drip tape is easy to use and work with and is highly recommended for anyone who has a garden planted in straight rows. Drip tape needs to be used in straight runs as it can not be bent or made into an "S" shape.



How to Install a Row of Drip Tape? Here is a video showing the basics of installing a drip tape system.



https://youtu.be/8fnK_1VKnjk

Choosing the right drip tape for your project can be overwhelming. Here is a link to our **Drip Tape Buying Guide** that will help you choose the right one to fit your needs.

Drip Line Tubing also has built-in emitters and is available in 1/4" and 1/2" tubing sizes. The same rules apply to drip tubing as regular solid 1/4" and 1/2" tubing. 1/4" tubing should not exceed 30 ft runs or 30 GPH total flow and 1/2" drip line should not exceed 200 ft. runs or 200 GPH total flow. 1/4" drip line can be used to create tree rings to water trees or large shrubs. 1/2" and 1/4" drip line can also be incorporated into raised beds and vegetable gardens.

Drip line is also available in a variety of emitter spacings to meet all your needs. Durable poly drip line is a great choice in vineyard and blueberry farm applications.



PRESSURIZING A DRIP IRRIGATION SYSTEM

Pressurizing a drip irrigation system sounds complicated but in reality you just need to make sure you cap the end of your tubing. Below are examples of how to cap a system when using 1/4" , 1/2" , 3/4", or 1" tubing.

To cap a run of 1/4" tubing:

Use a goof plug.



To cap a run of 1/2" tubing:

Use the following items:

- Perma Loc 1/2" End cap (reusable)
- 1/2" Figure 8 (reusable)
- Compression 1/2" End cap (one-time use)



To cap a run of 3/4" or 1" tubing:

Use the following items:

- Perma Loc 3/4" End cap (reusable)
- 3/4" or 1" Figure 8 (reusable)



Click here to check out [How to Cap Off a Run of Poly Tubing](https://youtu.be/CL2RnLEbbKk).



<https://youtu.be/CL2RnLEbbKk>

DRIP IRRIGATION KITS

Drip Depot began creating pre-made kits that are complete for our most popular drip irrigation system requests over the years. Our thinking behind creating our families of kits was to offer our customers a quick and easy solution to their watering needs while eliminating the guess work of making sure they ordered everything to complete their system. We realize that we can not make the perfect kit for everyone but with the knowledge gained in the first part of this guide one can either tailor any of kits to fit their watering needs or create their own kit. Below is a brief description of each of our kit families.

Container Drip Irrigation Kits are designed to be used to water potted plants on patios or porches.

Container Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044498-container-kit-selection-guides>

Container Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-container-gardening>



Vegetable Garden Drip Irrigation Kits are designed to be very flexible and adapt to many garden configurations beyond straight rows. If your garden is planted in straight rows you may want to look at our row crop kits.

Vegetable Garden Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-vegetable-gardens-gardens>

Gravity Drip Irrigation Kits We offer two types of gravity feed kits based on cleanliness of the water source. Clean water kits use standard drippers whereas dirty water kits use 1/4" inline shut-off valves as drippers because they have larger orifices that are less likely to clog than standard drippers with dirty water running through them.

Gravity Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044541-gravity-feed-kit-selection-guide>

Gravity Kit Selections

Clean Water Kits

<https://www.dripdepot.com/category/drip-irrigation-kits-gravity-irrigation-clean-water-kits>

Dirty Water Kits

<https://www.dripdepot.com/category/drip-irrigation-kits-gravity-irrigation-dirty-water-kits>



Greenhouse Drip Irrigation Kits include all the parts necessary to create a functional and efficient greenhouse drip irrigation system. The kits are designed to run mainline tubing around the base of each wall in the greenhouse, which allows for easy access from your mainline tubing to all the plants throughout your greenhouse.

Greenhouse Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044542-greenhouse-kit-selection-guide>

Greenhouse Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-greenhouse-gardening>

Hanging Basket Drip Irrigation Kits are specially designed to set up a drip system that matches the special needs of hanging baskets.

Hanging Basket Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044545-hanging-basket-kit-selection-guide>

Hanging Basket Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-hanging-baskets>



Landscape Drip Irrigation Kits Landscapes are often a melting pot of plant types which results in various watering needs. Our landscape kits contain a variety of button drippers in several flow rates and overhead watering devices like spray jets on stakes and micro-sprinklers in order to give you all the tools you need to properly water your landscape.

Landscape Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044501-landscape-kit-selection-guide>

Landscape Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-landscaping>

Raised Bed Drip Irrigation Kits are designed with the special needs of raised beds in mind. The raised bed kits have more 1/2" elbows to accommodate getting the water to the top of the beds and the kits contain more 1/4" dripline than any other kit family. We have found that we are able to get a much more uniform saturation than with drippers when the beds are densely planted by using the dripline. The raised bed kits also include drip emitters for the beds that contain only a few plants and/or to help those plants that may require more water. Please keep in mind, any Drip Depot kit is not limited to a specific use, although it may have been designed for a specific use.

Raised Bed Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044494-raised-bed-kit-selection-guide>

Raised Bed Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-raised-bed>



Row Crop Drip Irrigation Kits utilize drip tape. Drip tape is a flat tubing that becomes round when filled with water and has drip emitters built into the tape. Drip tape is easy to work with and economical. The limitation of drip tape is that the tape must be used in straight lines, which means drip tape is a great option in situations where gardens or plants are planted in straight rows.

Row Crop Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044539-row-crop-kit-selection-guide>

Row Crop Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-row-crops>

Small Farm Drip Irrigation Kits are designed to water more area and longer straight rows of crops than our row crop kits. The small farm kits come with tape that has emitters built in and 3/4" mainline tubing, which allow for longer runs.

Small Farm Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044495-small-farm-kit-selection-guide>

Small Farm Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-small-farms>



Tree Drip Irrigation Kits are designed to create "drip rings" using 1/4" drip-line which are put around the base of the tree. The rings are easy to create and simple to install. We realize that there is no need for "fancy" parts for customers who want to drip irrigate trees. Our tree kits are simple and to the point.

Tree Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044503-tree-kit-selection-guide>

Tree Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-trees>



Vacation Watering Drip Irrigation Kits are designed to take care of your plants when you are not there. We offer not only traditional drip irrigation solutions, kits with timers, but we also have innovative watering products that are for indoor plants as well.

Vacation Watering Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-vacation-watering>



Vineyard Drip Irrigation Kits are designed to water grape vines with tubing hanging on the vine wires. Grape vines are planted in straight rows and the kit sizes are based on the number of rows each can water.

Vineyard Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-vineyard-drip-kits>



Window Box Drip Irrigation Kits utilize 1/4" dripline with built-in emitters. Dripline is flexible and easy to work with, which makes it ideal for any size of a window box.

Window Box Kit Guide

<https://help.dripdepot.com/support/solutions/articles/11000044504-window-box-kit-selection-guide>

Window Box Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-window-boxes>



Maintenance Kit include some of the most popular items needed to repair and/or expand your existing drip irrigation systems.

Maintenance Kit Selections

<https://www.dripdepot.com/category/drip-irrigation-kits-maintenance>

STARTING YOUR SYSTEM FOR THE FIRST TIME

Once you have laid out and installed your drip irrigation system we recommend taking a minute to look everything over before starting it up for the first time. The first step is to double check that the sequence of your head assembly is correct. Listed below are the head assembly parts.

Timer (Optional) - Backflow Preventer - Filter - Pressure Regulator - Tubing Adapter

Before pressurizing your system we recommend flushing your new system. To do this leave any end caps open at the end of each run of mainline tubing. Turn your water on and let it run for a minute or

two. By flushing your system you are ensuring that any debris that may be in the system is expelled before starting. This will prevent clogging of drippers and help your system perform correctly from the start. After flushing close your end caps.

Next, walk the length of the system paying close attention to anywhere there is a fitting or an end cap. You are checking to make sure that each fitting or end cap is securely attached and that no holes are left open or unplugged.



Once you are convinced that everything is installed correctly go ahead and turn on your water. We recommend letting the water run initially for 10 minutes before checking for problems. When you first turn on the water you may hear a hissing sound and see drippers that spit and sputter. This is normal and is due to air being expelled from your system as it fills with water. It takes a bit to flush the air out and pressurize the system with water.

After 10 minutes of run time go ahead and walk the length of your system and check to see that all of your watering devices are working correctly. Hopefully everything is working without an issue. If you experience any problems please read the next section on troubleshooting drip systems.

TROUBLESHOOTING DRIP SYSTEM

Below is a list of common problems we hear from our customers and the potential causes followed by possible solutions.



My pressure regulator is leaking!

- 1) The washer may be missing. Remove and check for a washer. If no washer is found in the pressure regulator check the packaging that the drip parts came in as the washer can fall out during shipment.
- 2) The pressure regulator is installed in a constant pressure situation. Pressure regulators cannot be under constant pressure, meaning that they must be installed after a timer or on a faucet that is not left on 24/7.

My back-flow preventer is leaking!

Make sure that the back-flow preventer is not under constant pressure meaning it is installed after the timer if you have a timer incorporated into your drip irrigation system. If no timer is used in your system then make sure your faucet is not running 24/7.

My timer is not working!

Before ruling your timer defective try replacing the battery with a new one. Each timer comes with a manual and a trouble shooting guide. In addition, each manufacturer offers great customer support.



Drippers and fittings are popping out of the poly tubing!

- 1) The pressure in the system is too high. You will need a pressure regulator of 25 psi or less. If you have a pressure regulator installed it may be defective and needs to be replaced.
- 2) The tubing punch used may have been worn or defective and created holes that were not clean enough or too big which would cause the fittings or drippers not to seal correctly and be easily pushed out of the tubing.
- 3) Never reinsert a dripper into a hole where a dripper was removed. When removing a dripper or 1/4" fitting, always fill the hole with a goof plug and punch a new hole.

Drippers are spraying instead of dripping!

A trick is to hold your finger over the dripper and block the water flow for a count of 20. This can "reset" the dripper and usually fixes drippers that don't want to cooperate. If this doesn't work then the pressure may be too high.

Drippers, micro-sprinklers and spray jets have a white build up on them!

This stems from hard water that contains calcium in it. This can block the water flow out of your watering devices and reduce performance. For those with hard water, we recommend using cleanable watering devices so that when a build up does occur the watering device in question can be easily removed and cleaned.

Plants look stressed, weak, or wilting!

- 1) First inspect the drippers or other watering devices immediately around the plant or plants in question. It is possible that the watering devices may be clogged. If clogged remove and clean or replace.
- 2) Walk your system and look for any leaks or holes in your mainline tubing. A hole would limit or completely prevent water from being delivered to your plants.
- 3) The system run time is too short. Run time can change based on temperature and humidity. It is possible that as the summer goes on you may need to increase the run time of your drip irrigation system to match the increasing temperatures. Increase run time until plants look healthy again.

My drippers, micro-sprinklers and/or spray jets have uneven flow or no water coming out of them!

- 1) You may have a section of your tubing that is leaking and not allowing the system to become properly pressurized. Walk the system and look for anywhere that water is exiting your system that is not at a drip point. If a leak is found replace that section of tubing.
- 2) Filter is clogged: Remove your filter and take out the screen inside and look for excessive build up. Clean the screen and return the filter into your drip irrigation system.
- 3) Drippers, micro-sprinklers or Spray Jets may be clogged. Look at each watering device that is not performing correctly. Try to see if any build up is blocking the orifice. If build up is seen and the watering device is cleanable take apart and clean. If the watering device is not cleanable, replace it.
- 4) Pressure too Low: This may be as simple as making sure your faucet is completely open. Do not barely crack open the faucet that runs your drip irrigation system. Make sure that it is completely open when your drip irrigation system is operating.
- 5) This may be the result of exceeding the flow rate of the mainline tubing that you selected. You may need to break your system into 2 separate zones if you have exceeded the capacity for one run of tubing. Below is a reminder of length and GPH capacity for each type of tubing.

NOTE: When flow rate has been exceeded, strange things happen and nothing is predictable.

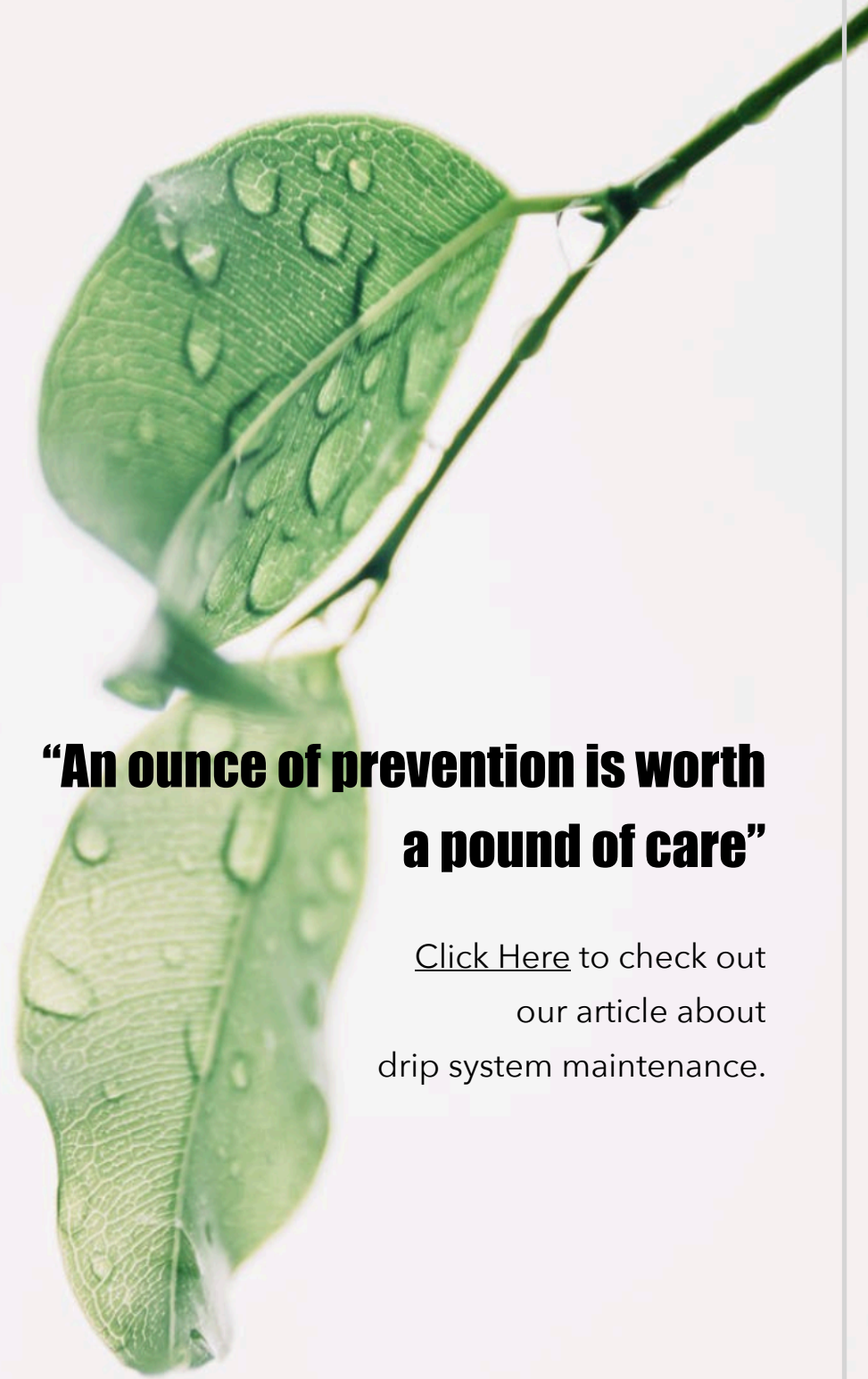
Tubing Size	Max Run Length	Max GPH
1/4"	30 ft	30 GPH
1/2"	200 ft	200 GPH
3/4"	480 ft	480 GPH
1"	960 ft	960 GPH

MAINTENANCE

Invariably, there will be issues that arise with your drip irrigation system. Many of the problems can be avoided or prevented by simple maintenance.

One recommendation that we strongly urge everyone to do regularly is to clean your filter. No matter how clean your water source is there will be particles in your water that could over time find their way to your drippers and possibly clog them. By keeping your filter clean you are ensuring that the water running through your system is debris free which eliminates the majority of the problems your drip irrigation system may face.

It is also a good rule of thumb to periodically walk your drip irrigation system when it is running. This helps to locate any trouble spots such as: clogged drippers, breaks in the tubing, or fittings that may have separated from your system. Locating these early will save you money and help keep your plants happy and healthy.



**“An ounce of prevention is worth
a pound of care”**


[Click Here](#) to check out
our article about
drip system maintenance.

WINTERIZING

Drip Irrigation systems are very durable and will last a longtime when cared for properly. The most important factor in helping your drip irrigation last a long time is preparing it for winter or freezing temperatures. Below is what we recommend for drip systems that are used in areas that experience freezing temperatures during parts of the year.

Before freezing weather occurs you should winterize your drip irrigation system by doing the following.

1. **Drain the Timer and Head Assembly** : Turn off the main water supply for the irrigation system. Remove the timer and head assembly (back-flow preventer, filter and pressure regulator) from the water source. Drain and store these components indoors. Don't forget to remove the batteries from the timer. If you have a dedicated storage box, you can keep all these system parts together and locate them easily in the spring.
2. **Drain Tubing Lines** : Open end caps on drip lines so that water can drain out. We recommend that you walk your mainlines and lift lines and fittings at low spots. This will help in removing any excess water and aid in drainage out the open ends. Tubing can survive some freezing, but fittings will crack if standing water freezes inside them.
3. **Replace End Caps After Draining Tubing** : Once you are sure that all excess water has been removed from your mainlines, you can replace the caps. We also recommend that you cap off or



plug the threaded end of the female swivel adapter (at the place where the head assembly was removed). Doing this will keep bugs from entering your system throughout the winter.

For Those with Valve/ Manifold Systems : Steps 2 and 3 will be the same, but you will need to run the timer/controller through its normal watering cycle after the main water supply is turned off. This allows each valve to open and relieves water pressure on the main line and valves. Once the controller has run through its cycles, set it to the "off" position. Manually open all valves to reduce the chance of standing water freezing and cracking your manifold components.

Using an Air Compressor to Clear Lines : Some of our customers also like to use an air compressor. Air pressure and water pressure are very different. Wear protective gear and keep the air pressure regulator set as low as possible to get the job done, as pressures above 30 PSI can cause harm to skin and eyes. We recommend that you always have the ends of the line open and always protect your hands if using as a coupler between the poly tubing and the nozzle of the air compressor. By following these simple rules, it will help to ensure that you do not damage your system with too much air pressure.

RESTARTING YOUR SYSTEM

When starting up a drip irrigation system for the first time after sitting all winter the process is much like when a drip irrigation system is run for the first time. Before starting you want to reassemble the head assembly components, that you stored inside out of the weather, in the correct order. This is a good time to put fresh batteries into your timer and replace the rubber washers in the female hose threaded connections. Check your filter to make sure that it is clean before hooking up your system.

Before running water through your drippers. You will want to flush out your system by opening up end caps at the end of each run of mainline tubing and letting your water run for a few minutes. This is especially important for systems that sat outside all winter as you never know what might have been living inside your tubing. By giving the mainline a good flush you will avoid clogging your drippers with any debris that may have accumulated in your tubing over the winter.

Once the system is flushed, attach end caps again and turn on your water. You may again hear hissing and notice drippers spitting and sputtering. Don't worry. It is just the air in the system being expelled. Allow to run for 10 minutes. After 10 minutes walk the length of your system looking for drippers that may not be working properly. Also check your tubing for any leaks that may have been caused by cracks or rodents chewing on the tubing. Once your system passes your inspection you are ready for another year of trouble free watering.

If you want some tips before getting your drip system ready for another bountiful growing season, click here to check out our article: **[Time to Tune Up Your System.](#)**



GOT SUGGESTIONS?

We value your opinion! Please let us know what you think about our installation guide. For feedback or suggestions, or any questions, please email us at **support@dripdepot.com** . We are here to help.

