

# Drip Irrigation Kit Installation Manual

## Gravity Feed Drip Irrigation Kit for Vegetable Garden



Models:

- Starter Kit: (DK-GFVG)



Starter Kit

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## Description

This kit contains everything you will need to go from rain a barrel (not included) to your plants, including a rain barrel bulkhead fitting. **This kit uses 1/4" Soaker Hose Dripline** for vegetable garden rows. The number of plants that can be watered with this kit is an estimate based on the total linear feet of emitter tubing. *If you want to automate your drip system, a Hose End Timer (DD-HEDT) can be purchased separately.*

**1/4" Soaker hose dripline** (aka Drip emitter tubing) is attached directly to 1/2" solid poly tubing supply line with 1/4" barbed connectors. The soaker hose is then run down the length of the garden rows. If you want to stop or control the flow of water in 1/4" soaker hose tubing, you can install an optional flow control valve (DD-FCV250). A rain barrel bulkhead fitting is included to turn a garbage can, bucket, or barrel into a rain barrel.

*A Hose End Timer (DD-HEDT) or 1/4" Flow Control Valve (DD-FCV250) can be purchased separately.*



Hose End Timer

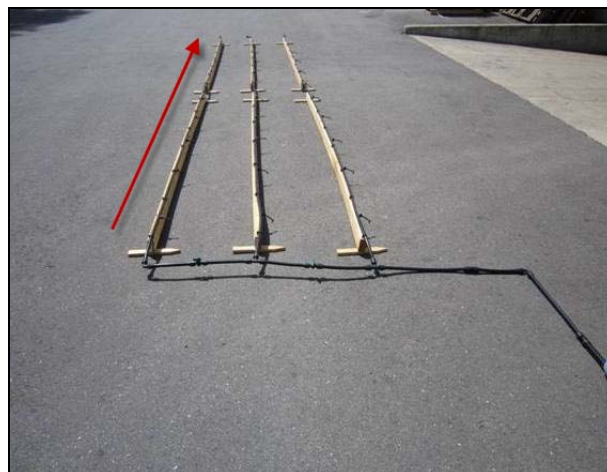


1/4 Inch Flow Control Valve

## About Gravity Feed Drip Systems

Drip irrigation products are designed for use with constant pressure of 15 - 30 psi. The stated output for soaker hose dripline is based on this pressure. For example, the internal 1/2 gph emitters in the soaker hose tubing will deliver one half-gallon of water per hour if the system is pressurized at 15 psi.

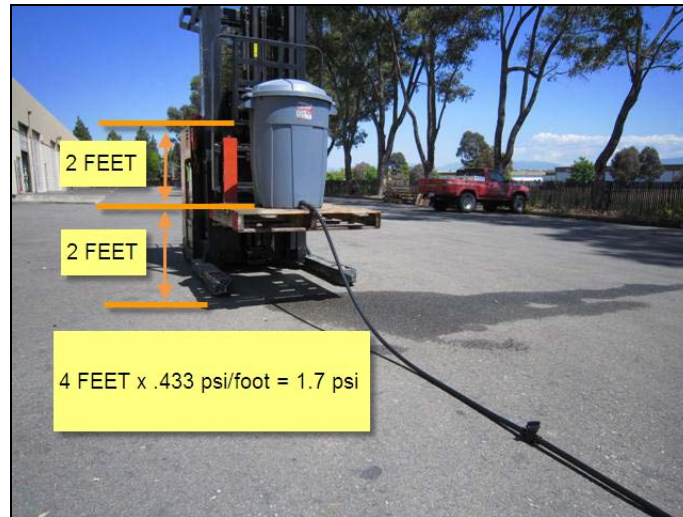
Since the pressure with a gravity system is often well below this range, and drops as the system operates, emitter flow rates will be substantially less than those specified for the individual emitter. This kit uses 1/4" soaker hose tubing and the flow rate will also vary between emitters on the same line of drip tubing as they are placed farther away from the water source.



Drip Emitter Output drops down the line

In a nutshell, a **gravity-fed drip system will distribute water inconsistently throughout the system.**

**To determine the water pressure in a gravity feed drip system,** measure the height of the water in the rain barrel or tank to the ground.



**Rain Barrel at 2 foot elevation**

If the rain barrel is on a hill above the plants to be watered, measure the height of the barrel above the planted area. You gain .433 psi for each foot of elevation. For example, if you fill a 2 foot garbage can (or rain barrel) with water, the pressure is less than 1 psi (.866 psi). As the water level drops in the barrel, so does the pressure. The output of the drippers will drop as the water level drops.

At very low pressure, it may take several hours to deliver the amount of water needed for your plants. For example, if a dripper emits 1/8 of a gallon of water per hour with a rain barrel 3 feet above the ground, you need to run your drip system for 4 hours in order to deliver 1/2 gallon of water to your plants.



**Rain Barrel with drip tubing**

We have done extensive testing with our drip kits in multiple configurations in order to provide you with the best recommendations. Our goal is to help you build a gravity-feed drip system with the most consistent drip output.

To achieve the recommended 15 psi (and 1/2 gph output) your rain barrel would need to be 34.6 feet above your plants.

If you are willing to accept very low and uneven water output, you can build a gravity-feed system for watering plants with a container on grade or just a few feet off the ground.

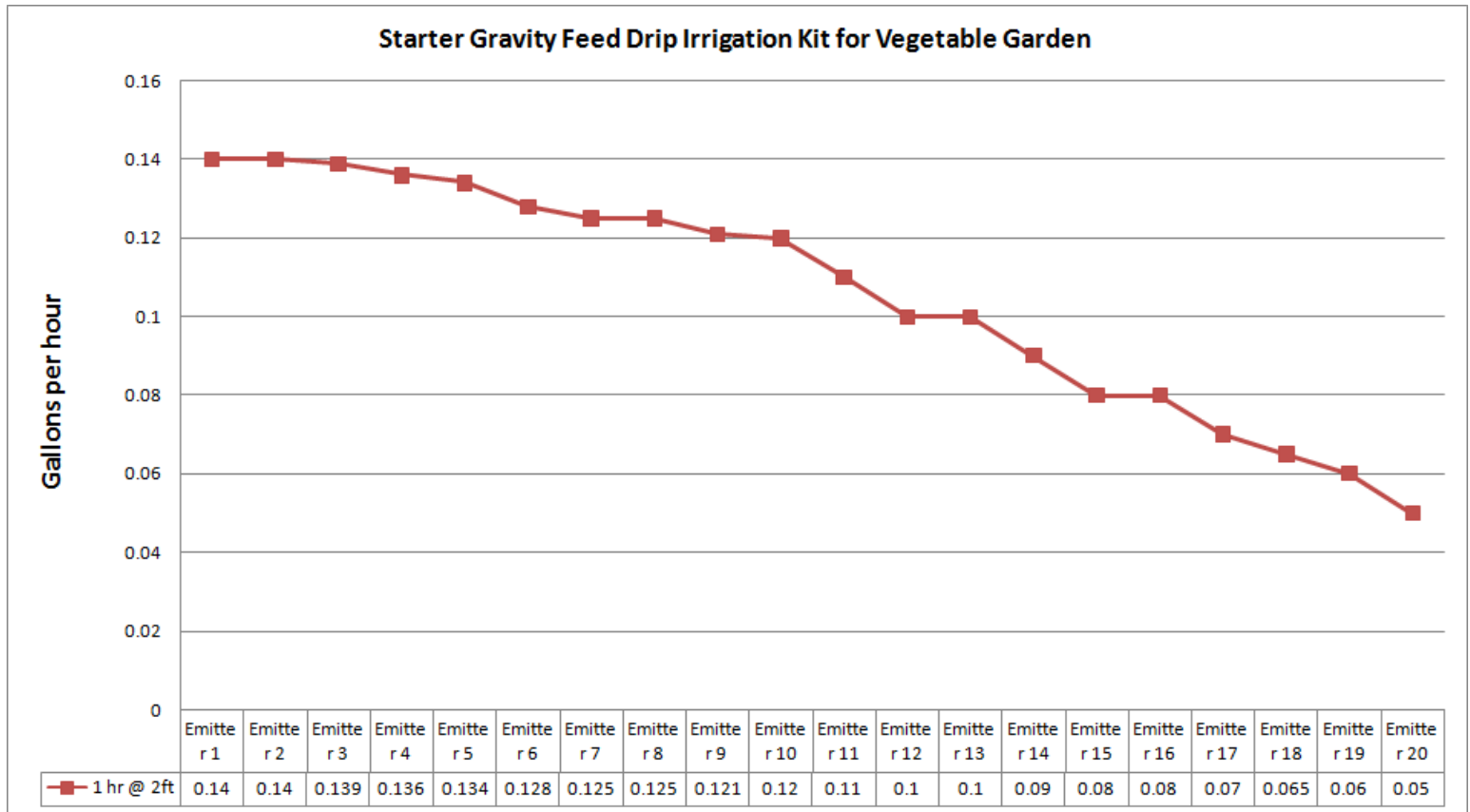


**Drip Irrigation Testing at Irrigation Direct**

## Gravity Feed Guidelines

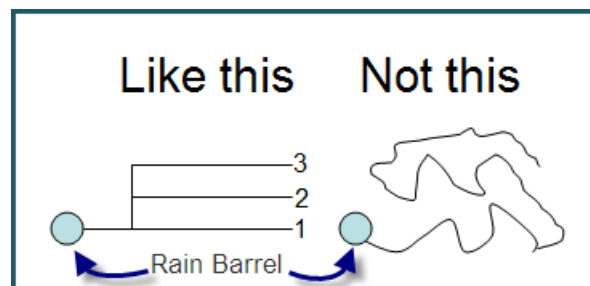
These guidelines are included to help you achieve the most consistent water output from each of the soaker hose drip lines. It might not be practical for you to follow each of these guidelines with your particular landscape or garden layout. The more of these guidelines that you incorporate into the design of your gravity feed drip system, the more consistent output you will achieve.

1. **Output drops off down the line as you move farther away from the supply line.** The graph below shows the output for a single line of Soaker hose dripline (DD-DET250-12-100) attached to a rain barrel. In this example, the rain barrel is installed 2 ft above the ground and filled with 2 ft of water. 20 ft of dripline with emitters spaced 12 inches apart (20 feet total). As you can see below, the individual output decreases toward the end of the drip tubing.



**Single 20 foot length of Soaker Hose Dripline - Mainline attached at end**

2. **Use short drip tubing runs & a grid layout.** You will get better results with grid layouts of short tubing lengths (20 ft or less) than with a long snaking drip tube.



## Installation: Overview

The Bulk Head Fitting (DD-BHF75) comes with an instruction sheet called "Installing a Bulk Head Fitting in a Rain Barrel". You will attach a Y Filter and Swivel Adapter to the Bulk Head Fitting. The supply line is 1/2" Solid Drip Tubing and is run next to your landscape or vegetable garden plants. A 1/2" Flow Control Valve is used to control the water flow from the rain barrel to the plants. Small plants will get one 1/4" flow control valve. Larger plants should get two 1/4" flow control valves. Trees will likely require 4 or more valves. We've included stakes for the 1/4" tubing. You may purchase 1/2" stakes separately.

## Installation: Step-by-Step

*Roll the tubing out in the sun to soften. Weigh it down and let the sun heat the tubing for 30 minutes. This will make it easier to work with.*

### **Step one: Installing the Bulk Head Fitting**



Follow the instructions to install the enclosed bulkhead fitting. *If your rain barrel has a bulkhead fitting attached, skip to Step Two.*

### **Step Two: From the Rain Barrel to the Individual Plants**

1. Attach the **Y Filter** (DD-YS75HFM) to the male hose threads of the bulkhead fitting.



2. Screw the **Compression Swivel Adapter** (DD-CHS700) onto the hose inline filter.



3. Attach **1/2" Solid Drip Tubing** (DD-DH700) to the 1/2" swivel adapter and run it across the top of the garden rows. **Layout tips:** Read the **Gravity Feed Guideline** for tips on laying out your drip system for best output performance.



4. Add the **1/2" Flow Control Valve** (DD-FCV700) in a convenient location after the swivel adapter. This is the "on/off switch" for your gravity-fed drip system. Just cut the 700 poly tubing and insert the flow control valve like a coupler (see below).



5. Use **1/2" Compression Elbows** (DD-L700) to make 90 degree turns in 1/2" ploy tubing.



6. Run the 1/2" tubing above the garden rows and secure in place with **8" wire stakes** (S8)



7. Add **Figure 8 End Caps** (DD-F8) to the ends of 1/2" solid drip tubing. Leave the end open for flushing.



8. **Open the Flow Control Valve to turn on the water and FLUSH THE LINE until all lines are clear of debris. Replace the 1/2" threaded end caps at the ends of the 1/2" solid drip tubing.**

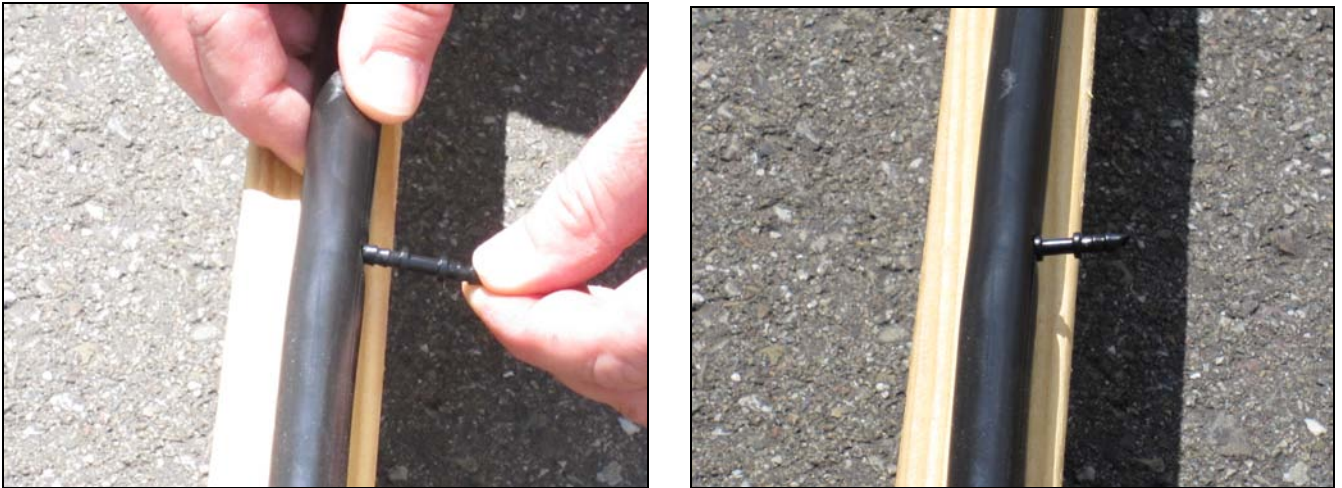


### **Step Three: Installing Soaker Hose Dripline**

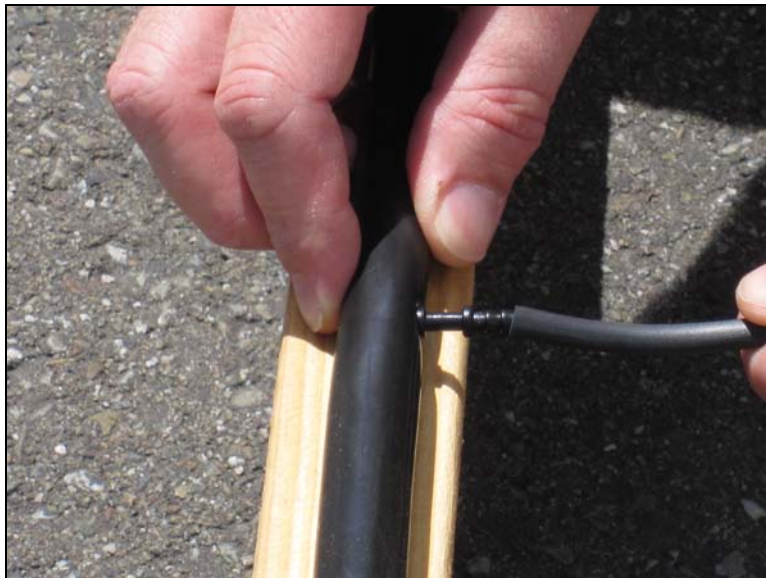
1. At each row use the **Deluxe Hole Punch** (DD-HP250) to poke a hole in the 1/2" tubing.



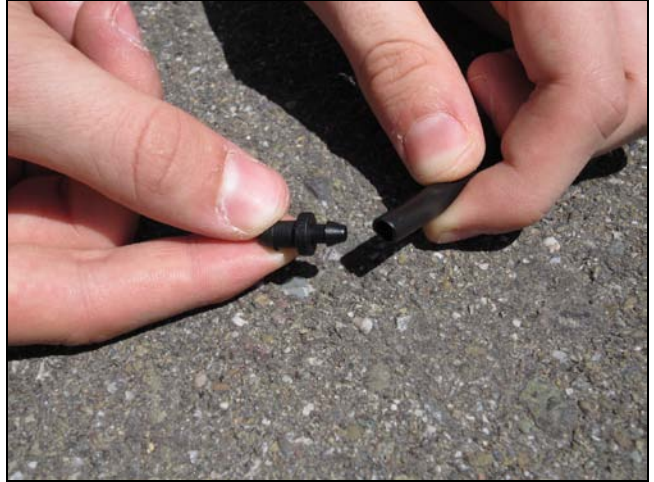
2. Insert the **1/4" Barbed Connector** (DD-C250) directly into the 1/2" tubing.



Attach a piece of **1/4" Soaker Hose Dripline** (DD-DET250-12-100) to the barbed connector and run it down the length of the row.



Cut the tubing with scissors and push the small end of the **Goof Plug** (DD-GP) into the open end of the 1/4" tubing to cap off the ends.



3. Turn on your system and check each valve for water output. Remember that some inconsistency of output is to be expected with a gravity-fed drip system.

- **Goof Plugs** (DD-GP) are used to plug holes in 1/2" drip poly tubing or cap off 1/4" micro tubing.

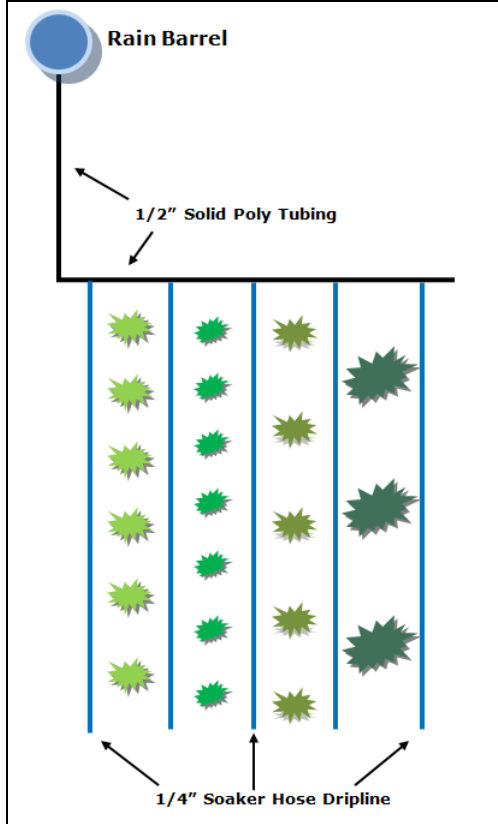


# Gravity Feed System Layouts

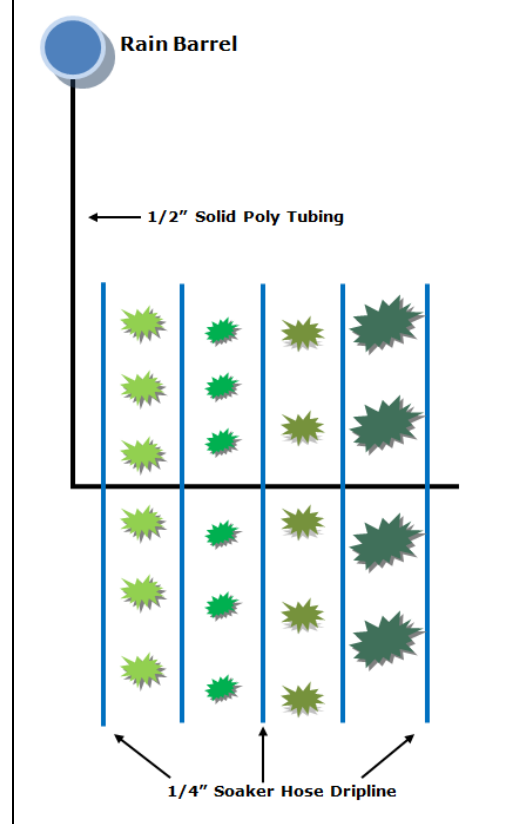
Here are a few sample layouts for our gravity feed kits. Use the tips below in your design to help equalize the output. **Maximum length of Soaker Hose Dripline = 20ft**

## Connection Options:

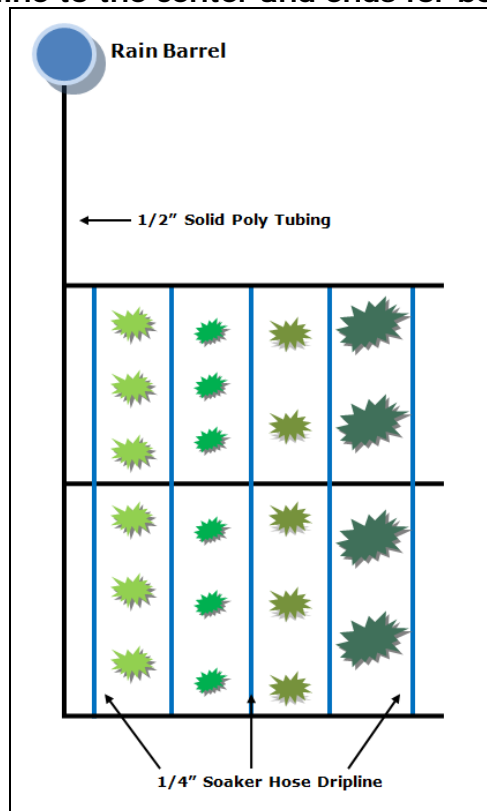
### Starter Kit Example #1



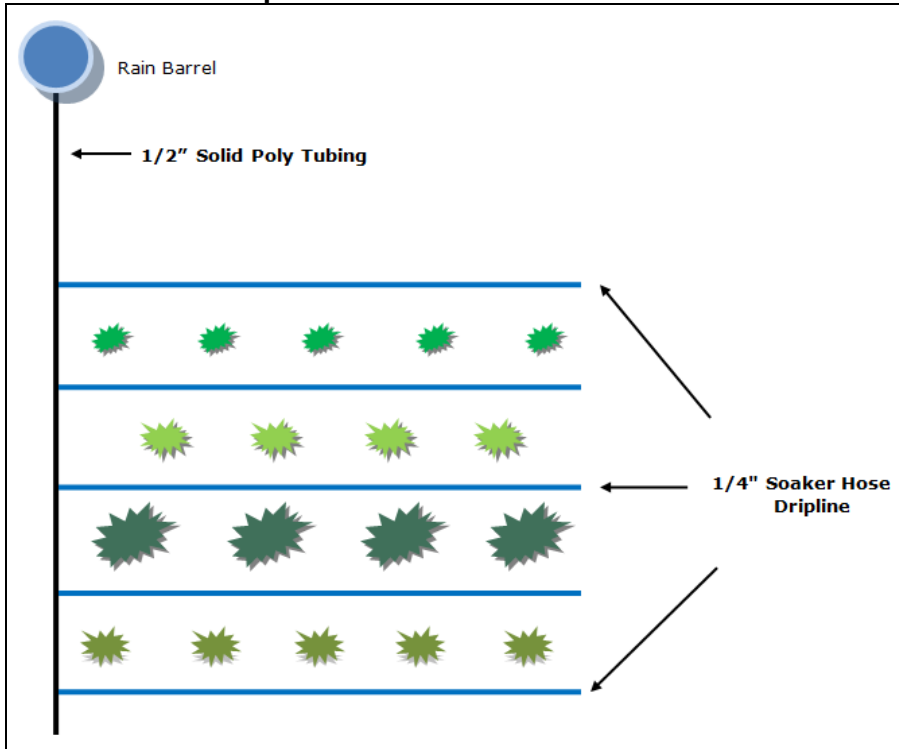
**Tip: Attach mainline to center for better water distribution**



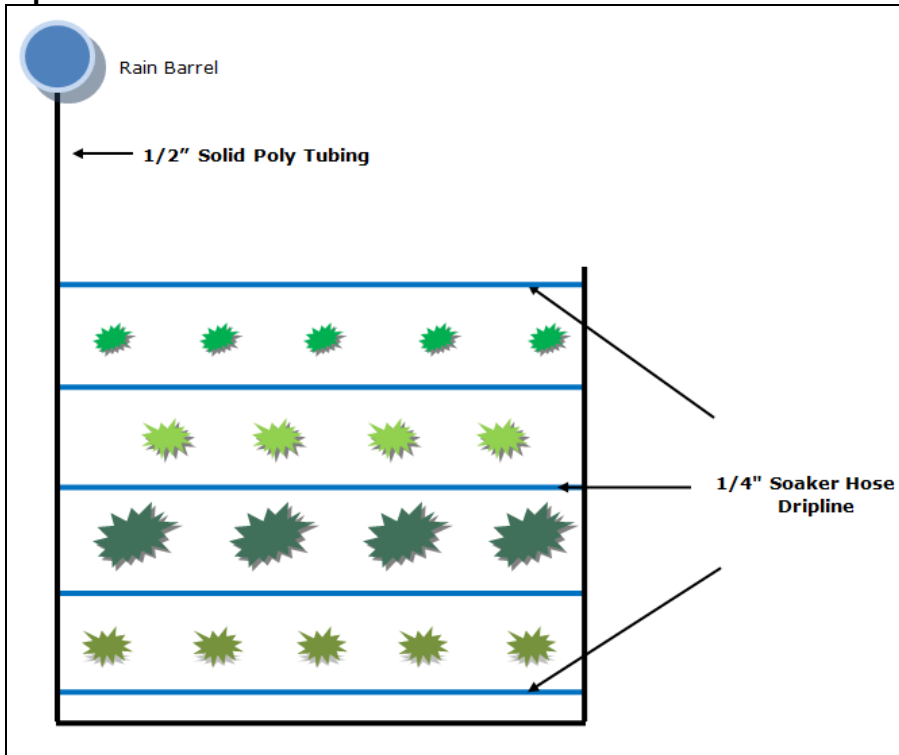
**TIP: Attach mainline to the center and ends for best water distribution**



## Starter Kit: Example 2





## Tip: Attach mainline to the ends for better water distribution



# Parts List

	ITEM	Quantity			PART #
		S	M	L	
	<b>Bulk Head Fitting</b> Provides a threaded connection from the rain barrel (bucket) to your gravity feed drip irrigation kit. Requires a 7/8" hole saw (not included). Installation instructions included.	1	-	-	DD-BHF75
	<b>Y Filter with hose threads</b> Installed between the hose vacuum breaker and the drip regulator. Protects flow control valves from impurities that may clog them. 150 mesh screen.	1	-	-	DD-YS75HFM
	<b>1/2" Compression hose swivel</b> Connects 1/2" drip tubing to rain barrel bulkhead fitting. Connects to 3/4" male hose threads.	1	-	-	DD-CHS600
	<b>1/2" Drip tubing (700 series) - 50 foot roll</b> 1/2" tubing for main lines. Supplies water to 1/4" soaker hose drip lines.	1	-	-	DD-DH700-50
	<b>1/4" Soaker hose dripline (250 series) - 100 foot roll</b> 1/2 gallon-per-hour in-line emitters molded into the tubing at 12" spacing. <b>Max run: 33 feet.</b>	1	-	-	DD-DET250-12-100
	<b>1/2" Flow Control Valve</b> Adjust or stop the flow of water through 1/2" drip mainline tubing. Handy when isolating irrigated sections. This is the "on/off" valve for your gravity feed system.	1	-	-	DD-FCV700
	<b>1/2" Compression Elbow</b> Used to create 90 degree turns in mainline drip tubing.	2	-	-	DD-L700
	<b>Figure 8 End of Line Plug</b> Caps off the ends of 1/2" drip tubing. Convenient removable fitting.	2	-	-	DD-F8
	<b>Deluxe Hole Punch</b> Designed to fit very comfortably in your hand. Creates clean, precise holes in 1/2" drip poly tubing.	1	-	-	DD-HP250
	<b>1/4" Connector - barb x barb</b> Used to connect 1/4" solid drip tubing or 1/4" soaker hose to drip mainline tubing. Connects lengths of 1/4" tubing.	10	-	-	DD-C250

	<p><b>Micro Tubing Holder Stake - 6"</b>  Keep drip emitters and micro tubing in place. Emitter and micro tubing is elevated, reducing dirt and insect intrusion.</p>	<p><b>20</b></p>	<p>-</p>	<p>-</p>	<p>DD-S2</p>
	<p><b>Goof Plug</b>  Plug holes in 1/2" drip poly tubing or cap off 1/4" micro tubing. Dual plug ends to accommodate large or small holes.</p>	<p><b>20</b></p>	<p>-</p>	<p>-</p>	<p>DD-GP</p>

## Maintenance Tips

### **WINTERIZING**

If you live where it freezes, it is a good idea to drain the water from your drip lines and the components connected to the water source. Here's how:

1. Turn off the hose bibb.
2. If you have a hose-end timer installed, let the system run through a watering cycle. This will open the timer and let any remaining water drain out of the timer and other components & into the drip tubing.
3. If you do not have a timer installed, unscrew the drip system from the hose bibb for a few minutes to let air into the line. Reattach the line after a minute or two.
4. **Note:** *We do not recommend blowing compressed air through a drip system.*

### **FLUSH THE LINE ANUALLY**

Since drip systems operate at low pressures, sediment can settle in the line over time.

1. Flush the line annually by unscrewing the end cap at the end of the line.
2. Check filter screen for debris and clean if necessary.
3. Turn on the hose bibb until the water runs clear from the end of the line.
4. Replace the cap.
5. Turn on the hose bibb and check the entire system for leaks.

### **REPAIR BREAKS & LEAKS**

1. Small holes in the line can be plugged with a goof plug.
2. For larger breaks or holes in the 1/4" drip tubing, make a clean cut around the damaged area and reconnect the lines with a **1/4" barbed connector** (DD-C250) *purchased separately*.
3. For larger breaks or holes in the 1/2" drip tubing, make a clean cut around the damaged area and reconnect the lines with a **1/2" Direct-Loc coupling** (DL-C600).

### **DRIP IRRIGATION TUTORIALS**

Visit our website for more tips, tricks, and expert advice: <http://www.irrigationdirect.com/expert-advice>

### **Irrigation Direct Limited Warranty**

Irrigation Direct warrants to the original purchaser that the Irrigation Direct Product(s) is/are free from defects in material and workmanship under normal use and service.

The warranty coverage lasts for a period of three (3) years starting from the date of purchase. For details visit the warranty page on our website: <http://www.irrigationdirect.com/warranty>

### **The Irrigation Direct Guarantee**

Our 100% satisfaction guarantee ensures that every item you purchase at Irrigation Direct meets your high standards—or you can return it for a replacement or refund. We want you to buy with confidence anytime you purchase products on the Irrigation Direct website. If you're ever dissatisfied with an item, contact us to return or exchange it.

## Contact Information

### **Product Questions:**

If you have a question about our products, first make sure that you have clicked "click for details" on our website on the product that you have a question about, chances are you will find all kinds of great details and even videos Or email us at: [productquestion@irrigationdirect.com](mailto:productquestion@irrigationdirect.com).

### **Installation & Maintenance Information:**

If you have a question that you couldn't find the answer for in this instruction sheet, please check the following sections of our website:

**Expert Advice:** [www.irrigationdirect.com/expert-advice](http://www.irrigationdirect.com/expert-advice)

**Tutorials:** [www.irrigationdirect.com/expert-advice/tutorials](http://www.irrigationdirect.com/expert-advice/tutorials)

**Videos:** [www.irrigationdirect.com/expert-advice/videos](http://www.irrigationdirect.com/expert-advice/videos)

**Technical Support:** [techsupport@irrigationdirect.com](mailto:techsupport@irrigationdirect.com)

**Phone** (8 AM to 5 PM M-F Pacific Time 925-449-1300)