

# INSTALLATION INSTRUCTIONS

## Living Wall™ Vertical Garden Kit



### Introduction

DIG's new Living Wall™ Vertical Garden Kit (hereafter referred just as Living Wall) can be attached to any interior or exterior structure to transform that space into a green, growing environment. The Living Wall can be fitted to any sized structure by attaching additional modular wall mounting brackets that are secured to each other and to the wall. DIG's new Living Wall is designed to make a vertical garden easy to set up and maintain on balconies, inside or outside walls, and fences.

DIG's Living Wall kit enables you to grow a diversity of plants such as an herb or vegetable garden, annuals, perennials, a collection of plants with striking patterns and colors as a welcoming entry statement for your home, or a selection of favorite plants to beautify indoor spaces or patio areas.

DIG's Living Wall integrated professional watering system kit (included) delivers controlled amounts of water into each individual pot, through the use of pressure compensating drippers with check valves to maximize efficient use of water. Once connected into a faucet (tap) or a 1/2" riser, the system may be automated with the addition of a DIG hose end timer that is programmed to minimize water usage. A tank with a pump may also be used to circulate the water through the drip system.

Our Living Wall is a low maintenance system that has open layers between the pots and the wall, providing protection from moisture and preventing discoloration of the exposed wall.

Successful plant growth with DIG's new Living Wall kit is dependent upon the location, selection of the correct growing media, the plant types, and the micro climate of the installation. The ideal potting material should drain well but retain sufficient water to reduce watering frequency.

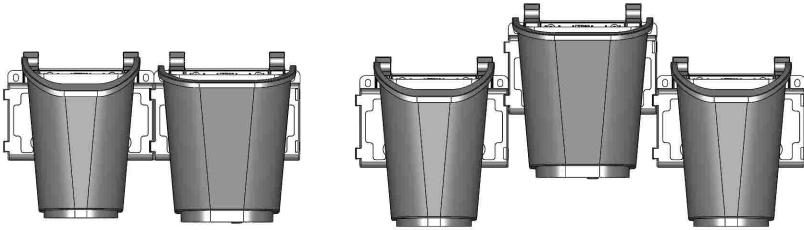
### Features

- Convenient modular wall mounting brackets that allow the pots to be hung and removed from the wall very easily.
- The wall mounting modular brackets can be easily secured side by side and can be used to expand the kit.
- The durable modular wall mounting brackets can be connected in a wide range of patterns with vertical or horizontal panels.
- The water supply is all out of sight except for the very small micro tubing that delivers water to a pressure compensating dripper positioned at each pot.
- The water line from Living Wall vertical garden kit can be connected into the water supply household faucet, garden hose or a pump.
- All connections are drip irrigation industry standard and additional parts are available at local hardware stores or garden centers.
- Uses DIG's pressure compensating drippers with a built-in check valve that eliminate water draining when the system is shut off, saving additional water.
- Quick and easy to install and maintain.

# Mounting Bracket Installation Steps

Determine what pattern you want to create and mount the wall mounting brackets accordingly. Due to the wall mounting bracket modular design, for best results and easy installation, start from the left side and keep a space of between 12" to 18" (30 to 45 cm) between each level.

Location is important in growing a Living Wall vertical garden. Growing on a vertical surface means that the amount of full sunlight may be restricted. Review the location and planting type that should be planted in the selected location. Also think about where your water source will be and how easily you can connect to the the water supply line.



Once you have determined where your first wall mounting bracket is to be located, hold it against the wall and get it level. It is most important that you get it level if you are going to add more brackets, because a small level error may magnify as the line of wall mounting brackets grows longer.

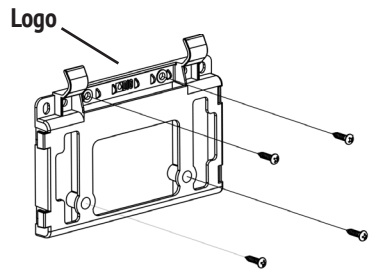
We recommend using a minimum of two screws per each mounting bracket and to utilize the two holes at the top, on the left and right of DIG logo (see illustration). Each mounting bracket has eight holes but no more than two to four are needed.

## Step 1:

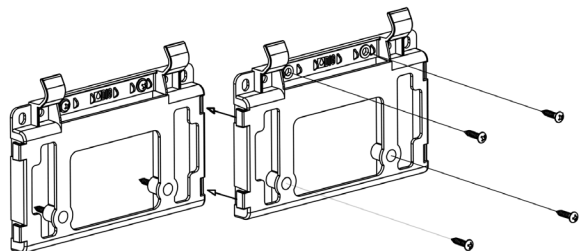
Use a screwdriver to mount the first bracket to the wall or structure using the screws provided. If attaching to a solid wall made of brick or concrete, use a masonry bit to drill the holes.

## Step 2:

Once a single wall mounting bracket is mounted, place an additional bracket and secure it to the first one; then continue mounting all other mounting brackets using the same method.



If something goes wrong when the planting is completed, remove the pot and sort the problem out, or even replant and mount it back into its original position. Choose top quality potting mixes as these will not only drain well but also have good water holding characteristics. Also these mixes wet easily and moisture readily spreads through the whole of the root zone.



# Drip Irrigation Installation Steps

It is highly recommended that DIG's Living Wall be watered automatically. One of DIG's hose end timers (tap timer) is well suited for watering the system because it can be programmed down to minutes. This will allow you to work out the ideal maximum watering time that minimizes the amount of "waste" water from the system. With a little patience you will be able to program the precise amount of time required to keep the right amount of moisture in the pot mix. Regular watering will prevent the soil from drying out and will help to maintain vigorous plant growth.

**Step 1:** Begin the installation at the water source by attaching the 25-PSI (1.7 BAR) pressure regulator to the faucet (tap). If you decide to automate your system, first install one of DIG's hose end timers (tap timer) (not included), and connect the timer to the faucet. Insert the 1/4" (6 mm) micro tubing into the 1/4" (6 mm) compression side of the adapter by forcing the micro tubing in and wiggling it from side to side, and then thread it into the male side of the pressure regulator. (see page 4)

**Step 2:** Unroll the 1/4" (6 mm) micro tubing and lay it out to the location of the Green Wall mounting pots.

**Step 3:** The micro tubing serves as the primary line that runs water to all the pots. At the center of each pot, cut the 1/4" (6 mm) micro tubing and insert a 1/4" (6 mm) tee (soaking the micro tubing in hot water will ease installation). Connect a short 2" to 4" (5 cm to 10 cm) piece of micro tubing to the 1/4" (6 mm) tee. Leave the ends of the 1/4" (6 mm) micro tubing open, so you can flush the line before completion. (see page 4)

**Step 4:** Turn the water on, and flush the line for 10-20 seconds to clean out any debris inside the system.

**Step 5:** Insert a .3 GPH (1.1 l/h) PC drip emitter into the end of the micro tubing. Then insert one side of the 2' (60 cm), 1/8" (3 mm) micro tubing into the dripper's barbed side (color: gray). Attach the stake to the end of micro tubing, and insert the stake into the pot near the crown of the plant. Repeat the steps for each pot and use the C clamp (included) to support the micro tubing where needed. (see page 4)

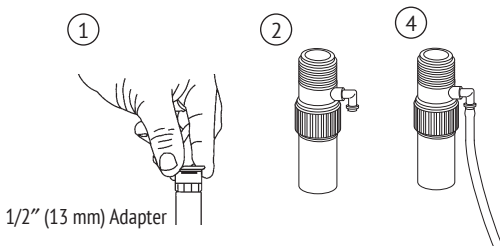
## Drip irrigation installation suggestions:

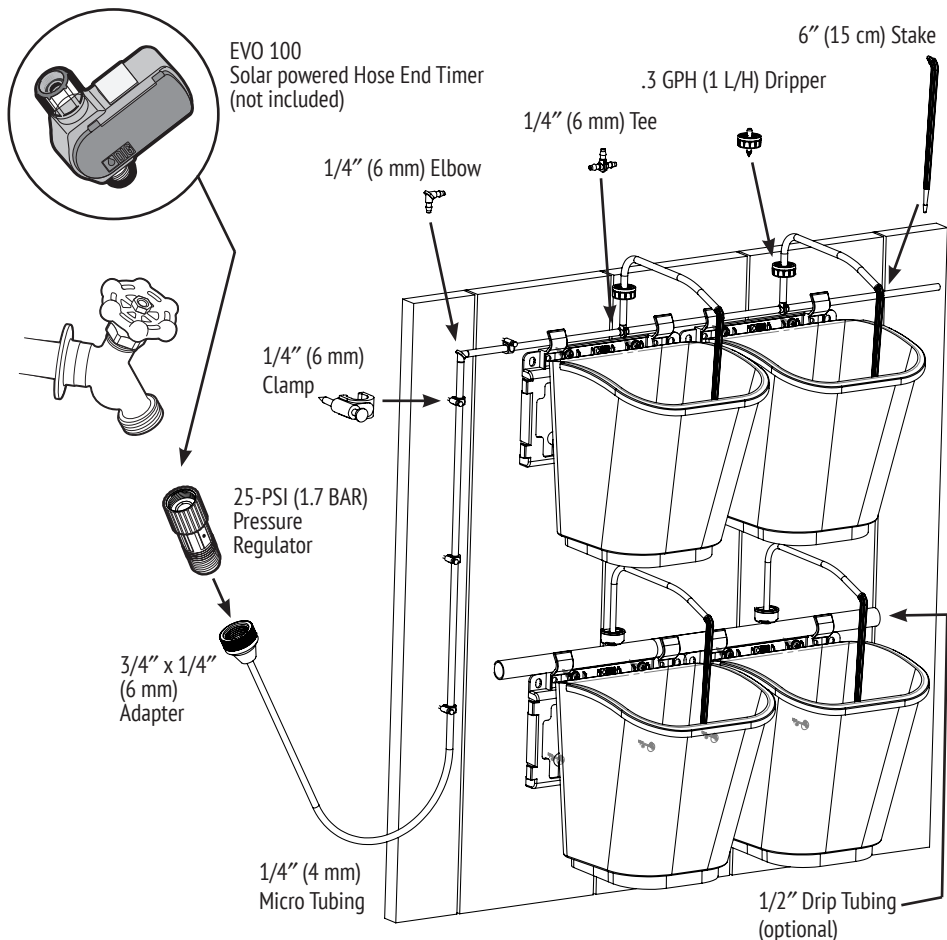
1. If an automated system is preferred, install one of DIG's hose end timers (tap timers).
2. If installed, test the hose end timer (tap timer) and make sure that is working correctly.
3. The system can also start from a 1/2" sprinkler riser (see below).

## Drip Riser Installation

If a sprinkler riser is used, begin your installation at the 1/2" riser that is closest to the area where the Living Wall kit is located.

1. Remove the spray head or pop-up sprinkler from the 1/2" riser.
2. Connect the 1/2" adapter with the 1/4" (6 mm) barbed elbow to the riser.
3. Turn the water supply on and flush the line. After you flush the line, turn the water off and attach the sprinkler head to the adapter.
4. Connect the micro tubing into the adapter, barbed elbow, and lay it out to the vertical garden.





## Expansion of Living Wall Kit

The irrigation kit is expandable up to 65 pots using 1/4" (6 mm) micro tubing as the main line. If larger than 65 pots, the main line needs to be 1/2" (16 or 17 mm).

It is simple to add extra pots. Once you have the kit installed, use the same methods to add additional wall mounting brackets and pots, and expand the irrigation system.

## PC Drippers Features

The PC drip emitters discharge the same amount of water under a pressure range of 10 to 50 PSI (.68 - 3.5 BAR), allowing for higher uniformity and longer lateral runs within the vertical garden planting. This feature allows the number of drip emitters on a single line to be maximized while maintaining an even flow rate from each PC drip emitter along the line.

The .3-GPH (1.1 l/h) self-flushing PC drippers with built-in check valves, included in the kit, contain a silicon diaphragm that continuously adjusts to varying water pressures and, at

the same time, allow particles to pass through the drip emitter's water passage providing reliable performance and a longer life. This method of flushing with a large flow path allows the drip emitter to operate at optimal flow rates under extreme conditions. In addition, the pressure compensating drip emitters have a special water saving feature that eliminates water draining when the system is shut off at around 2.2 PSI (.15 bar). At this pressure the pressure compensating drip emitters shut off completely, preventing any water drainage from the lateral. When the system is turned on again, the pressure compensating drip emitters simultaneously reopen at 4.3 to 4.5 PSI (.3 to .31 bar) for precise control of water flow over the length of the lateral.

## Selection of Plants

Apart from your knowledge of plants, the only restriction as to what can be grown is the size of the pots. Trees, for example, would not be a good choice to plant in the pots.

### So what's possible?

First, look to growing vegetables and herbs. Most herbs can be cultivated, even some of the woody shrubs such as rosemary and lavender. Both of these plants need long hours of direct sunlight to succeed so an exposed east/west facing wall will be needed. Soft stemmed herbs such as parsley, mint, basil and coriander will do well in our Living Wall™ pots as long as their water needs are supplied.

The idea of a vegetable wall is very appealing. This can be easily achieved with fast crops such as lettuce and the small oriental cabbages. Not all lettuces produce heads such as iceberg. Non-hearting lettuces can be harvested 'leaf by leaf' and there are plenty of varieties from which to choose. Vegetables do best in high light situations. Flowering annuals can make a dramatic and welcoming splash of color with many annual flowers well suited to vertical gardens. Maximize your floral selection by choosing in-season blooms that provide a dazzling flower show for three or four months at a time.

For a more permanent show where regular watering is required, consider succulents. There are many families of succulent plants where form and foliage color create interesting long term features. This is not to say that these plants don't flower; they do, and in many cases with great flair. Succulents are accustomed to getting by on little water and as a result have a tendency to rot if their roots are constantly wet. Use a cactus potting mix to fill the pots. In full sun you only need to water perhaps once every couple of weeks during summer so the plants experience dry soil in between drinks. Most succulents demand hot sunny locations to give their best show.

Some of the most spectacular vertical gardens are located indoors where there is more control over the environment, particularly when it comes to watering. Choosing a range of different plant foliage makes it possible to paint living pictures. As a general rule, soft stem plants are among the most successful and are good choices for vertical indoor gardens.

In a similar layout, patios and outdoor living areas can be decorated with living plants using the vertical format to create drama and effect. Tree growing orchids are groups of shade loving plants that are well suited to life in the air.

It is also possible to grow plants in both hydroponic and aquaponics systems using DIG's Living Wall. If one of these systems is selected, fill the pots with expanded clay as the soil-less medium. It is a good practice to drain the water into a reservoir or pond and add nutrients to the pond. In the case of aquaponics, fish would supply the nutrient through their excreta. In both methods, use a small pond pump to push water up into DIG's Living Wall™ for recirculation.

## Re-potting Plants

Most soft stemmed plants have a life span of one to two years and will need to be replaced when they lose their appeal. Remove the pot from the mounting bracket, empty the pot and use fresh potting mix, filling the potting mix to the top of the pot as settling will bring it down as much as an inch.

## Pots Planting and Mounting Steps

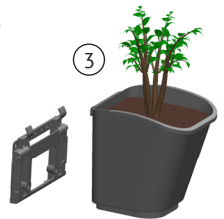
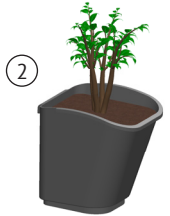
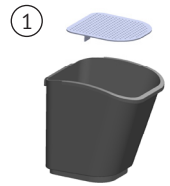
It is a good idea to plant the pots before mounting them into the modular wall mounting brackets. One of the main features of the Living Wall kit is that the pots can be removed from the mounting brackets. This means that the potting can be completed on a bench at a good working height. You can even establish the plants on the ground before mounting them into the mounting brackets. Once the pots have been mounted to the mounting bracket, if something goes wrong, it's easy to remove a single pot and sort the problem out, or even replant and then pop it back into its original position.

1. Position the meshed screen plate inside the pot with the two supporting legs face down.
2. Plant the pot selecting the right potting mix for the plants used.
3. Mount the pots into the mounting brackets. Each pot has a flat hook at the rear that slides into the center slot on the mounting brackets. The slot is wider than the flat hook and this allows some movement when positioning the pots.
4. Once the pot is mounted and in position, insert the micro stake into the pot and position the micro stake near the center of the pot. Anchor the micro stake, which can be pushed into the potting mix, so it doesn't get blown or sprung out of position.

**Note:** If you are going to grow a selection of plants, please be aware that the top row is best for taller growing plants as their natural vertical habit of growth is upward. For the second rows of panels with pots, it's better to choose plants with a flat or even trailing growth habit so they can get access to sunlight.

5. Turn the water on and check if the system is working well. If it is leaking somewhere, investigate the issue and fix it. Pressure-test the system to identify leaks in the laterals and fittings, and then program the hose end timer (tap timer) if used.

Water the plants regularly, two to three times per week. As a general rule, the surface of the soil should dry out between each watering. Watering requirements will vary as determined by location, weather, plant and soil type. Use a hose end timer to regulate how much water is applied to the plants.



## Checking the Watering System

It is critical to keep checking your watering system at regular intervals. Check the position of the micro stakes to ensure that the wetted area adequately covers the plants; it may be that additional outlets need to be added.

It is best to stop watering a few minutes before the water flows freely from the bottom of the pots. Too much water flowing through will leach nutrients and also waste water. Program the timer run time to a period that will have the minimum amount of water drain but support a good moisture level in the pot. Then the pots will be watered for a very small time on a regular basis.

The amount of water the plants require will vary depending on the type of plant, the weather conditions, type of potting mix you use, and the size of the pot. Check the moisture by scratching the potting mix to a depth of one inch.

## Feeding Requirements

Choosing a potting mix with nutrients ensures that anything planted will have sufficient nutrients to support the plants through a couple of months of growth or through the season. When additional nutrients are needed use a controlled release fertilizer to support the plants for a long season. The secret is to apply a small amount to avoid a stream of waste water coming out of the bottom of your Living Wall garden with most of the nutrients you applied staying at the top.

## Pest Control

Being suspended on the Living Wall, plants are out of reach of most pests, however snails might be able to get to them. There are low toxic pellets available that can be sprinkled over the soil to combat snails and their shell-less relatives, slugs.

Caterpillars are reasonably well adapted to attack the Living Wall vertical garden vegetable or flower display as their eggs may have been deposited directly on the host plants by the flying adult butterfly. At the first sign of damage use nontoxic spray control.

## Drainage Options

If combining pots to make a wall of flowers or vegetables, you may end up with a number of drainage points. Overwatering can easily occur if you have a vertical installation of a number of pots. This can happen when water drips down through the pots, each of which has its own dripper. The top layer would receive the least amount of water, while the lower layers would receive much more. One solution to this potential problem is to water so sparingly that water does not drain. The second solution is to have a vertical arrangement so water can only drip down one layer of the module at a time before the excess is drained away, and then collect the water at the bottom (recommended for inside use).

If the Living Wall is in a position where rain can do the watering, it won't be such an issue as the top level will tend to get the most water and lower pots will be getting mostly drip.

## Kit Includes

Qty.	Description
4	Small Pots
4	Large Pots
8	Modular Wall Mounting Brackets
8	3/4" (19 mm) Screws #8
1	25-PSI (1.7 bar) Preset Pressure Regulator
1	3/4" Female Thread x 1/4" (6 mm) Adapter
1	Screen Washer
1	50' (15 m) of 1/4" (6 mm) Micro Tubing with .170" ID x .250" OD (4.3 mm ID x 6.3 mm OD)
10	1/4" (6 mm) Tee
2	1/4" (6 mm) Barb
5	1/4" (6 mm) Barbed Elbow
8	.3 GPH (1.1 l/h) PC Dripper with Check Valve
8	24' (60 cm) of 1/8" (3 mm) Micro Tubing

**Note:** All dimensions are with outside diameter, unless otherwise specified.

**760.727.0914 FAX: 760.727.0282**

1210 Activity Drive  
 Vista, CA 92081  
 www.digcorp.com  
 email: dig@digcorp.com  
 26-150 REVA 110416 © 2016 DIG CORP

