



**GENERAL
HYDROPONICS®**

Bringing Nature and Technology Together

EcoGrower

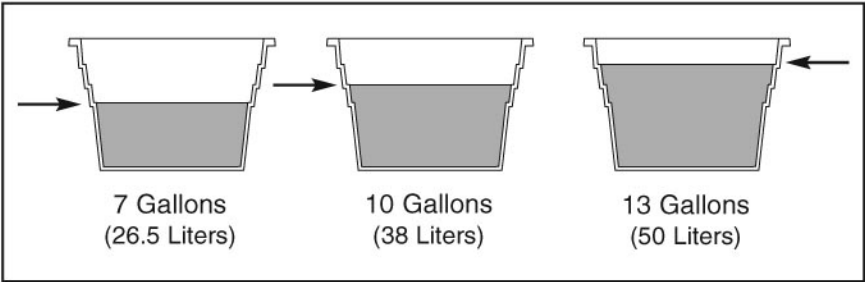
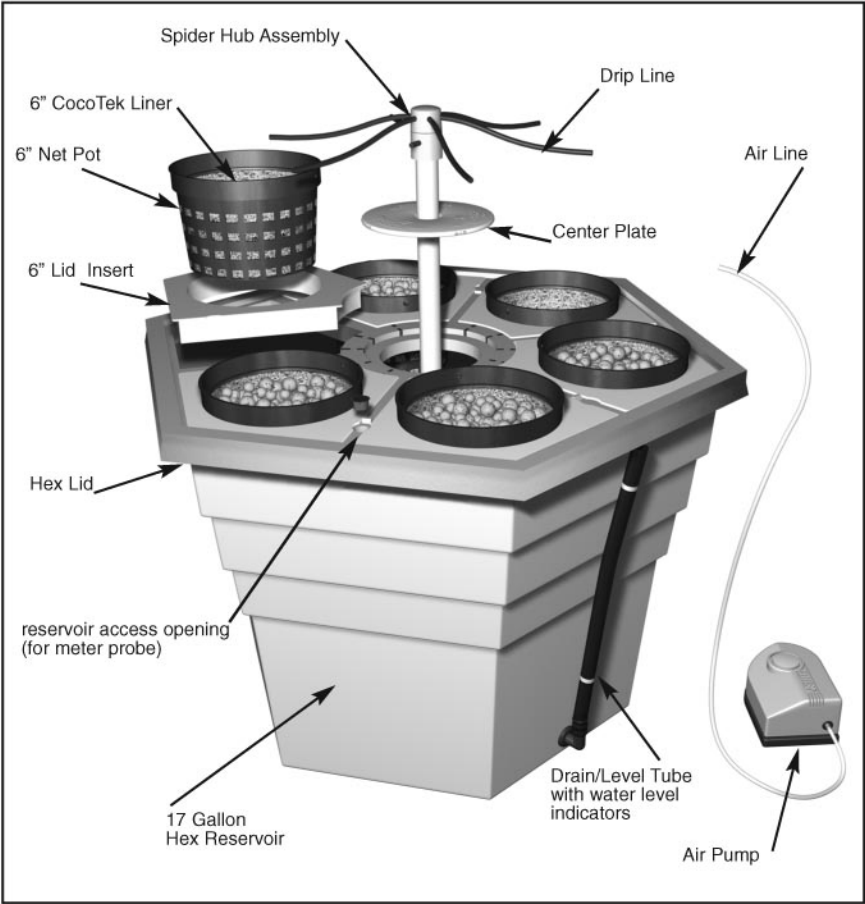
Quality Drip Hydroponic System

ASSEMBLY GUIDE



The **EcoGrower** incorporates an air driven "spider" drip system with the revolutionary General Hydroponic hexagonal reservoir featuring removable modular six-inch lid inserts. Each lid insert will accommodate one 6" net pot that can easily grow large plants.

ECOGROWER AT-A-GLANCE:



EQUIPMENT ASSEMBLY

Step# 1:

Remove contents from box.

Inspect and make sure all parts are present.

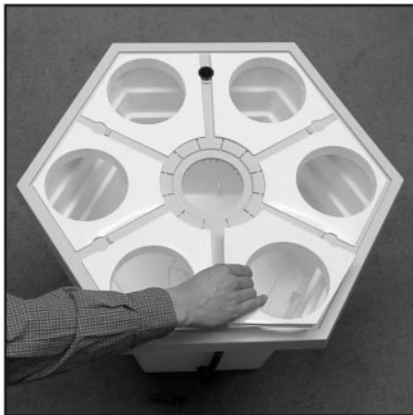


Each EcoGrower module consists of:

- Reservoir with drain/level tube -- 17 gallon total capacity
- Reservoir cover (Hex Lid)
- Spider Hub Assembly
- Spider reaming tool
- Air Pump with Air Line
- Six 6" lid inserts
- Center Plate
- Flora Kit (16 fl oz. bottles of FloraMicro, FloraGro and FloraBloom)
- Four 2 Liter bags of clay pebbles
- Six 6" Net Pots (plastic growing cups)
- Six CocoTek™ 6" liners
- Six CocoTek™ 6" caps
- Instructions plus support literature

Step# 2:

Position the hex lid on top of hex reservoir.
Place the inserts into the six sections.

**Step# 3:**

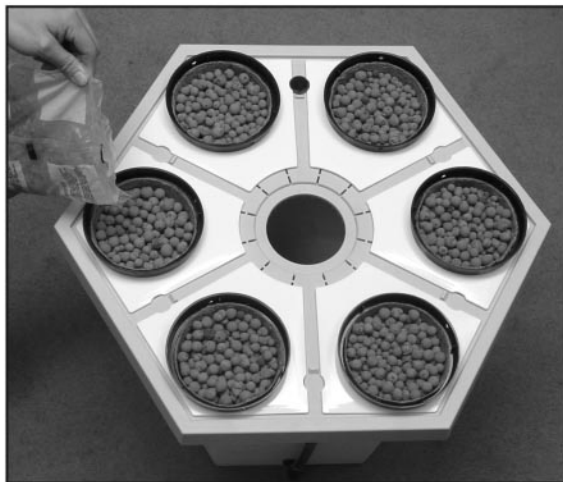
Insert the six 6" net pots into the six holes in each of the inserts.
The six CocoTek 6" liners are then put into the six net pots.



Step# 4:

Rinse clay pebbles that came with the kit.

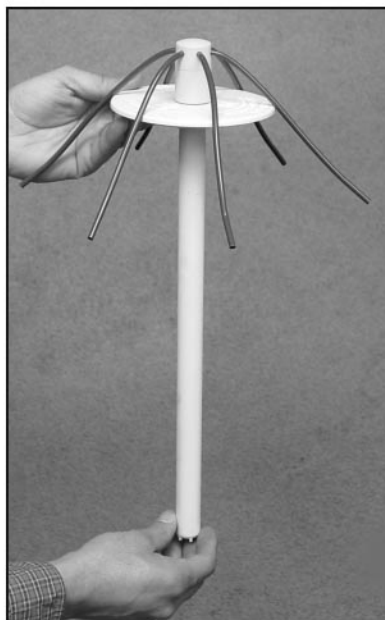
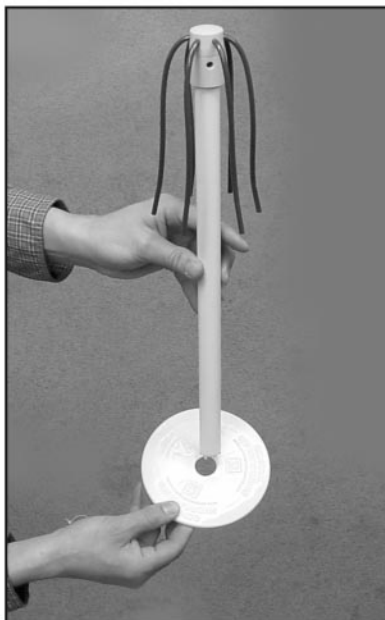
Make sure not to fill above holes at the top of the net pots where drip line will feed through.

**Step# 5:**

Slide down and remove zip tie from spider hub assembly.

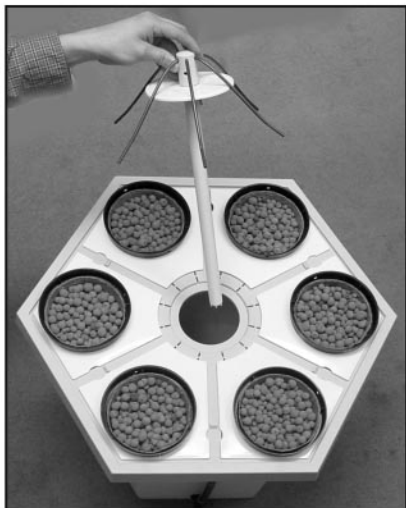
The drip lines on the spider hub assembly have "memory" and will stretch out to their proper position after assembly.

Insert spider hub assembly through center plate all the way to the top.



Step# 6:

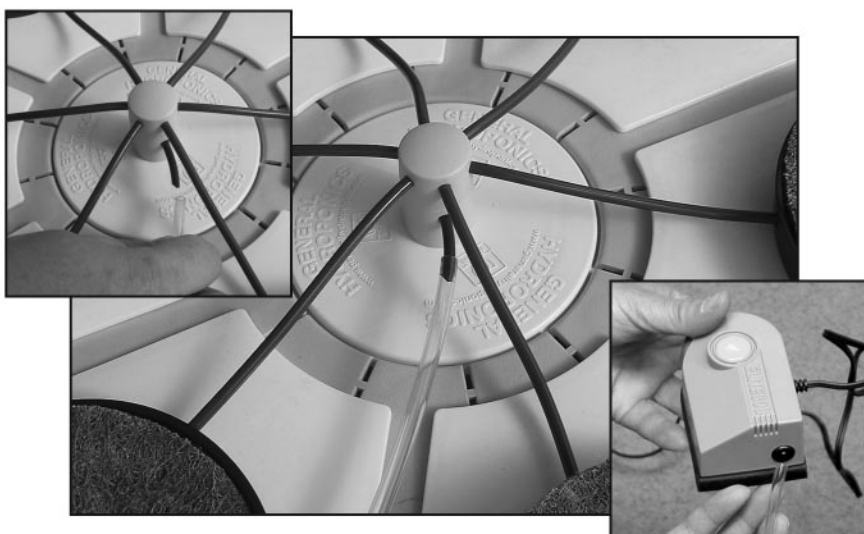
Lower the spider hub with center plate into opening of the hex lid.
Insert the six drip lines through the holes in each 6-inch net pot.

**Step# 7:**

Find the clear air hose.

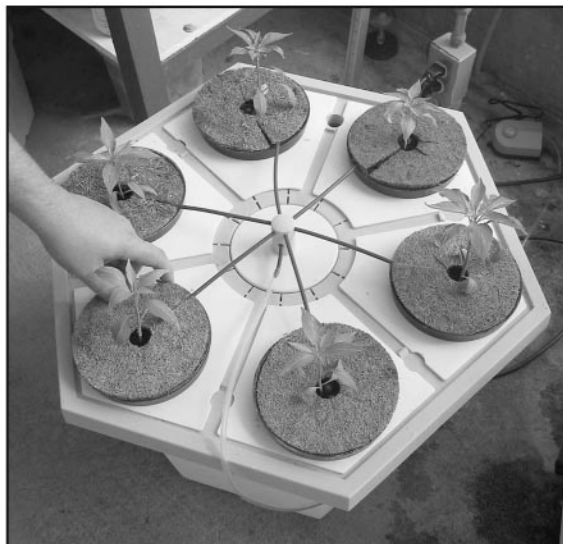
Slide one end over the small 1/4" tube on pumping column.

Next, insert the other end into the air pump.



Step# 8:

Carefully transplant the seedlings or cuttings into grow sites. To keep light out and algae growth down, CocoTek 6" cap may be placed on top of liner (optional).

**Step# 9:**

Remove one of the grow sites for access, fill hex pot with 13 gallons of solution. Fill up to line on blue drain tube. See "NUTRIENTS" section on following page for mixing.



CLEANING BETWEEN CROPS:

Drain the whole system and brush out the reservoir. Sponge off all parts with bleach to disinfect. Rinse everything thoroughly to remove all traces of bleach. To be sure that the system is free of bleach refill it with water and run it for a few hours, then drain again before introducing a new crop.

CLAY PEBBLES:

We have had many years of excellent results working with clay pellets for plant support. We recommend that you rinse new clay pellets thoroughly to remove the fine sand which builds up from abrasion during shipping. Between crops it is good to wash the clay pellets well, removing all organic debris. An effective method is to boil used clay pellets in a large pot. This sterilizes and dissolves any accumulated salts.

**Caution: Do Not rinse clay pellets with bleach (chlorine).*

NUTRIENTS:

Nutrients are the lifeline to your plants. Since you are providing the plants with all their nutritional needs we recommend you feed them the best. General Hydroponics™ offers a wide variety of plant foods. GH nutrients are formulated to provide top performance with GH systems. For best results use GH formulas with GH systems.

1 Fill the reservoir with fresh water.

If you are in an area with poor- quality water (over 200 ppm Total Dissolved Solids), we recommend that you use purified water (Reverse Osmosis and/or rain water). General Hydroponics also has **Hardwater FloraMicro™** nutrient formula available. Hardwater FloraMicro™ should be used in place of regular FloraMicro where hard water is a problem.

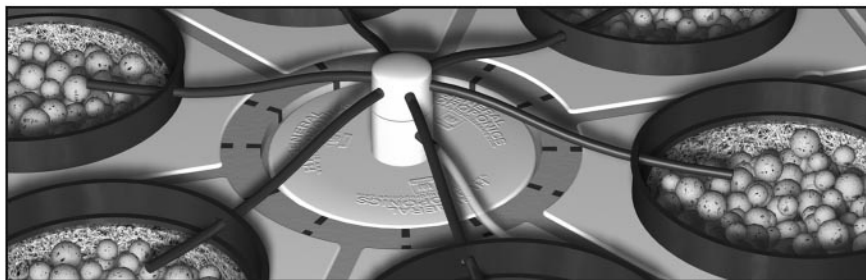
2 Add nutrients as per instructions on label. Add FloraMicro first then add FloraBloom, and FloraGro, stirring well each time. Never pre-mix nutrient concentrates. This may cause nutrient "lock-out".

3 Adjust the nutrient solution pH between 5.5 and 6.5 if necessary (see instructions with the General Hydroponics pH Control Kit).

Notes

Nutrient mixes can be adjusted in both strength (conductivity) and "flavor" (ie: the ratios of Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulfur & Microelements). To adjust these factors mix different combinations of FloraGro, FloraBloom and FloraMicro with water.

- To enhance vegetative growth, use more FloraGro and less FloraBloom.
- To enhance flower growth use less FloraGro and more FloraBloom.
- To enhance fruit production use equal amounts of FloraGro, FloraBloom and FloraMicro.
- To provide more Calcium or Iron (for green, leafy vegetables), use slightly more FloraMicro.
- Many growers follow the 3-2-1 mix: **For vegetative growth:** 3 parts FloraGro (ie, teaspoons per gallon), 2 parts FloraMicro plus 1 part FloraBloom. **For flowering:** 1 part FloraGro plus 2 parts FloraMicro plus 3 parts FloraBloom. **For fruiting:** 2 parts FloraGro plus 2 parts FloraMicro plus 2 parts FloraBloom. These units are ratios, not absolute quantities, and are only a *suggested* starting point. Use a conductivity meter to determine total nutrient strength.



FREQUENTLY ASKED QUESTIONS

1. How often do I add nutrient? What is “topping-off”?

Add nutrient every time you drain your system. “Topping-off” is a term that describes adding water to the system. Remember, during hot spells plants transpire higher quantities of water leaving behind nutrient salts. These salts can cause ppm levels to rise too high creating a stressful environment for your plants. Keep your ppm at a lower level during these times of extreme transpiration (1000 ppm).

2. How often should the water be changed?

That depends upon the growth (stage and rate) of your plants. When plants are very small every two weeks should suffice. Once the plants start to approach maturity it is best to change the nutrient mixture completely at least every two weeks, or weekly for better results. Between nutrient changes it is important to “top-up” the reservoir with fresh water. Add more nutrient only if the conductivity or ppm drops. Generally the conductivity (nutrient strength) should be maintained between 800 to 1,200 ppm (parts per million).

3. Should I invest in a ppm or conductivity meter?

Yes, a conductivity meter is an essential tool for measuring nutrient strength. By knowing the conductivity level for a specific variety of plant, the grower can adjust nutrient strength to meet specific crop needs.

4. Can I turn off my system for any length of time?

Many growers will run the system 24 hours all 7 days in a week. However, to save power or reduce noise, 15 minutes on and 15 minutes off will do.

5. What is the optimal temperature range for the nutrient solution?

Optimal temperature is generally between 62° and 75° F.

6. At what pH level should my system be maintained and why?

pH levels should be between 5.5 and 6.5 because at this pH level, nutrients are more readily available for the plant.

Ordering parts and supplies

To order net pots, nutrients, clay pellets, or parts for your EcoGrower system, see your General Hydroponics retailer, or call General Hydroponics, Inc. for listings.

1-707-824-9376 Monday thru Friday, 9 am to 4:00 pm, PST.

TROUBLESHOOTING:

If white salt deposits form on the clay pellets:

1. Try using a milder nutrient solution and topping off with plain water only.
2. Occasionally drain your system, refill with plain water plus FloraKleen and run the pump overnight. After the overnight rinse, empty reservoir and refill with fresh nutrient.

If Plants are not growing well and you suspect "hard" water:

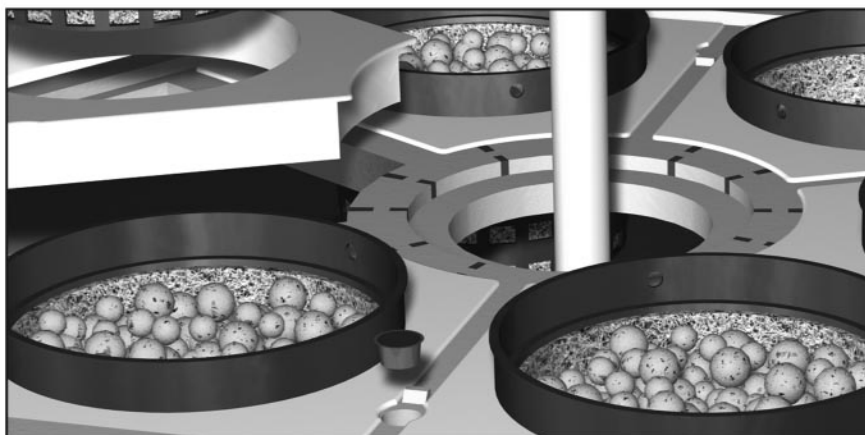
1. Reduce nutrient strength (1000 ppm)
2. Use FloraMicro Hardwater in place of FloraMicro.
3. Try distilled, purified or R/O water. You should see a significant improvement in plant health and growth within one week.
4. Collect rainwater for use in your EcoGrower.

If nutrient solution stops flowing from the drip lines:

1. Check to ensure that pump is plugged in and reservoir is filled with nutrient solution.
2. Disconnect air line from the air inlet and check whether the air is coming through (put end under water and look for bubbles if you are not sure). No air flow could mean that the pump is broken and must be repaired/replaced or that the air line is loose or blocked. Try cutting an inch off each end of the line to provide a tighter fit.
3. Blow into the air inlet to check whether it is clogged, and rinse the pumping column in hot water. This type of clogging is usually an indication that you have hard water or too strong a nutrient solution.
4. Check whether emitter holes in the drip ring are clogged. Ream the spider legs with the spider leg reamer.

We Value Your Opinion

Thank you for selecting the EcoGrower modular hydroponic system. Your satisfaction, and your opinions about our products, matter a great deal to us. Please send us any comments or suggestions about how we can improve our product line. If you wish to be on our mailing list (to receive information about new products), please send us your name and address.



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Recommended Products from General Hydroponics:

FloraNova® represents a breakthrough in fertilizer technology, as it gives users both the strength of a dry concentrate and the ease of a liquid. This unique formulation of highly purified minerals and natural additives combines the benefits of hydroponic as well as organic gardening methods. FloraNova one part formulation, combines all the elements required for hydroponic cultivation, plus it is extremely concentrated. A very small amount of FloraNova mixed with fresh water will provide your plants with proper nutrition. FloraNova works superbly in hydroponic environments, as well as with both soil-less mixtures and soil grown plants.

MaxiGro® & MaxiBloom® are extremely potent, stand-alone, water-soluble, dry concentrate nutrients. Complete in Primary, Secondary, and Micro Nutrients, pH buffered MaxiGro and MaxiBloom will provide superior results when used with a wide variety of crops in both hydroponic and soil-based environments.

FloraMagic® is an all-purpose, highly concentrated, water-soluble, dry nutrient. FloraMagic will increase growth rates and yields in practically all kinds of plants without causing them stress. FloraMagic is the definitive user-friendly blend of Primary, Secondary, and Micro Nutrients.

FloraMato® Dry is a blend of minerals was specially designed to enhance the luscious flavors of tomatoes, peppers, cucumbers, eggplants, beans, melons, strawberries, and other plant-based foods. FloraMato Dry is a stand-alone, fully water-soluble, dry nutrient. This unique combination of Primary and Secondary Nutrients with pH buffers keeps nutrients fully water-soluble and available to plants.

Floralicious® leads to hydroponics with flavor and incredible yields! Floralicious is made from a highly concentrated blend of bioactive microbial, plant, marine plants, and mineral extracts. Guided by the latest scientific findings, our unique fermentation process creates a potent blend of phytostimulants and biometabolic precursors that enables Floralicious to bring out your plants' full genetic potential. Floralicious augments metabolic activity in the root zone, stimulates Krebs cycle metabolism, and facilitates mineral transport and bioconversion. Floralicious contains a perfect balance of vitamins, phytohormones, humic acids, polysaccharides, fructans, beta-glucans, L-amino acids, and polyflavonoids.

KoolBloom® is a highly concentrated nutrient additive that promotes abundant flowering and helps facilitate ripening in annual flowers and herbs. KoolBloom is rich in phosphorous and potassium, plus our own secret ingredients. This blend enhances the production of essential oils and fragrances by mildly stressing plants during the formation of fruits and flowers.

SubCulture® is a revolutionary blend of fifty-two soil microorganisms that will increase vitality and yield in all plants. Whether in soil or hydroponics, the proprietary mixed blend of bacteria, actinomycetes and Trichoderma fungi colonize in the root zone and media to form a symbiotic relationship with the plant. Plant root mass will increase as well as nutrient absorption, creating bigger healthier plants.

CHI® is a foliar spray that improves crop yield, enhances resistance to environmental stress, and improves plant vigor. CHI contains chitosan salts, a naturally occurring polymer found in the shells of crustaceans, insects, and many fungi. Research has demonstrated that when plants are exposed to CHI they respond by thickening their cell walls. This increases the plant's resistance to environmental stress and disease while increasing its structural integrity. CHI also induces the activation of genes that stimulate protease inhibitors that help protect against external stress.



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