



**Future Harvest Development™**

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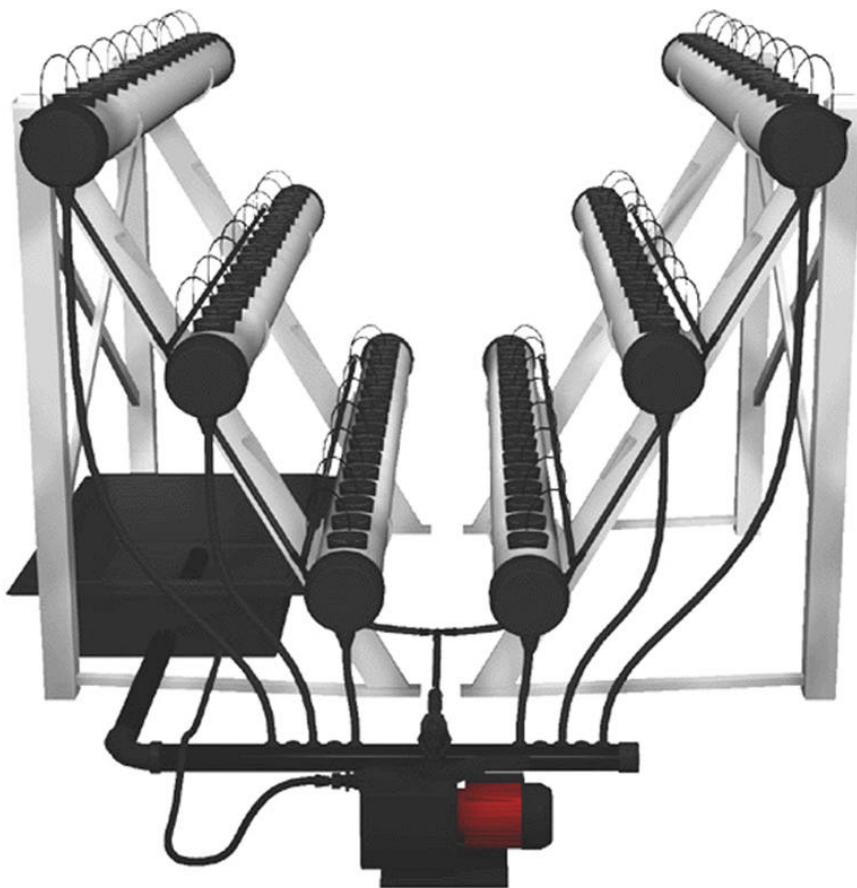
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## Pipe Dreams - PD96



**WARNING:** BEFORE PUTTING WATER PUMP INTO OPERATION FILL UP NUTRIENT TANK TO TOP OF PUMP. THE PUMP MUST NEVER RUN DRY OTHERWISE, WARRANTY WILL BE DECLINED. READ FILLING INSTRUCTIONS BEFORE USE.

Welcome to Future Harvest Developments! After 15 years in the indoor gardening industry, we are proud to present a state of the art Aeroponic Garden Kit... This packaged garden is completely adaptable to meet your individual needs and individual pieces may be purchased separately.

## **PIPE DREAMS 96**

### **Aeroponic Garden**

#### **IMPORTANT:**

- **MILLED EDGES OF PLASTIC ARE SHARP. USE CAUTION WHEN HANDLING!**
- Please read all directions carefully and familiarize yourself with all materials included in kit.

#### **Tools required for assembly:**

- |   |  |
|---|--|
| • SLOTTED SCREWDRIVER   | • WATER PUMP PLIERS  |
| • EXACTO KNIFE  | • 5/16" SOCKET AND NUTDRIVER   |
| • ELECTRIC OR CORDLESS DRILL                                      |  |
| • 9/16" DRILL BIT (SPADE BIT)                                     |  |
| • JIG SAW (to cut opening in Nutrient Tank <b>if not precut</b> ) | • Be sure to clean out all cut lengths of plastic to ensure system does not become clogged |

#### **GENERAL ASSEMBLY INSTRUCTIONS**

- Words in **Bold** are Parts
- Tools are CAPITALIZED
- Separate Drawings from Instruction Sheet to use as references
- Read *all* the instructions before starting
- Check out headings on the following pages and carefully refer to the instructions as you are setting up the system
- If you find your own way of doing things that really works, please, let us know!

One Complete 6 Tube Garden Kit contains:

| <b>PD 96</b><br><b>Material Check List</b> |   |       |   |
|--|---|-------|---|
| 6  | 6" Diameter Tubes x 8'  |       | <b>LARGE COMPONENT BAG</b>                                      |
| 4  | Angle Brace   | 1     | 1 x ¾" Reducing Bushing   |
| 4  | Upright Post  | 1     | ¾" 90 Street Elbow  |
| 4  | Bases c/w End cap   | 1     | ¾" x ¾" Transition Nipple                                       |
| 4  | Cross Brace   | 1     | ½" Twistloc Female Hose Adaptor                                 |
| 1  | 30 Gallon Nutrient Tank w/Lid   | 6     | ½" Twistloc Back Flushing Endcaps                               |
| 96   | 3 1/2" Mesh Baskets   | 5     | ½" Twistloc Tees  |
| 6  | Rubber Endcaps - Female   | 2     | ½" Twistloc Elbows  |
| 6  | Rubber Endcaps - Male   | 10    | ¾" Rubber Grommets  |
| 12   | Pipeholder Bracket  | 4     | ½" PVC Plugs  |
| 1  | 2" ABS Drain Manifold –4' c/w<br>- 2" Threaded Female Adapter   | 1     | 1" Nipple x Close   |
| 1  | 2" ABS Drain Manifold Extension-3'  | 1     | 1" Washer   |
| 1  | T1003 Cycle Timer   | 1     | Teflon Tape   |
| 1  | EcoPlus 230 Water Pump  | 1     | Punch   |
| 1  | Eco Filter Housing c/w CRL5 Filter<br>Screen  | 20'   | ¾" Flex Hose to be cut into 6 pieces:<br>2 x 2', 2 x 3', 2 x 5' |
| 1  | Suction Hose Kit  | 20    | .075 Poly Spaghetti Line @ 26" Lengths                          |
|  |   | 48    | .220 x .160 Poly Spaghetti Line<br>@ 15" Lengths                |
| 7  | 1/2" Diameter Black Vinyl Tubing @<br>89" to be shipped inside 8' pipe – 6<br>@89"<br>7 <sup>th</sup> length to be cut as: (Option A:<br>(4x9") OR B: (4x21") | 3 pcs | ½" Diameter Black Poly Tubing:<br>2 x 16" and 1 x 18"           |
| 1  | Instruction Manual  | 12'   | Float Hose  |
|  |   | 1     | Float Assembly  |
| <b>SMALL COMPONENT BAG</b>                 |   | 1     | ¾" Hose Wye w/ Filter Hose Cap                                  |
| 12   | 1 ¼ X 5/16 Nylon Bolts  | 1     | 2" Rubber Grommet   |
| 2  | 2 ¼ x 5/16 Nylon Bolts  | 1     | 2" Rubber Elbow   |
| 14   | 5/16" Nylon Nuts  | 1     | 2" ABS Male End Plug  |
| 24   | 1" Bracket Rubbers  |       |   |
| 4  | Post Caps   |       |   |
| 22   | Cordlocs  |       |   |
| 49   | Mistheads   |       |   |
| 49   | 5/16" Rubber Grommets   |       |   |
|  |   |       |   |

## A. GARDEN FRAME ASSEMBLY

### Material Check List:

|   |                    |   |                          |
|---|--------------------|---|--------------------------|
| 4 | Upright Post       | 2 | 2 ¼ "x 5/16" Nylon Bolts |
| 4 | Angle Braces       | 4 | Cross Brace              |
| 4 | Bases c/w End Caps | 4 | Post Caps                |
| 2 | 5/16" Nylon Nuts   |   |                          |

### 1. BUILDING PIPE SUPPORT TRIANGLES (Please refer to drawing A1-1)

**STEP 1** - Insert the slotted end of the **Angle Brace** into the large tab cut-out in the top-side of the **Post**. Two small slots cut into the **Angle Brace** and the tab cut-out on the top-side of the **Post**, provide a locking mechanism for the two components. The **Angle Brace** will snap into place when the small slots line up with the tab cut-outs in the **Post**.

**STEP 2** - Join the **Angle Brace** to the **Base** by sliding the bottom of the **Angle Brace** into the large cut-out in the **Base**.

**STEP 3** - Insert **Base** into the tab cut-out at the bottom of the **Post**. Pinch the end of the **Base** to help it slide into the tab cut-out. The small slot cut into the end of the **Base** and the tab cut-out at the bottom of the **Post**, provide a locking mechanism for the two components. The **Base** will snap into place when the small slot lines up with the tab cut-out in the **Post**.



**NOTE:** The locking slots on the **Pipe Support Triangle** must be **PARALLEL** to the **Post** to correctly lock the **Pipe Support Triangle** in place.

## A. GARDEN FRAME ASSEMBLY (cont.)

### 2. CONNECTING CROSS BRACE to PIPE SUPPORT TRIANGLES (Please refer to drawing A2-1)

**STEP 1** - Take the end of one **Cross Brace** and insert it “corner first” into the lower small tab cut-out on the side of the **Post**. You may need to hold the **Cross Brace** with one hand while giving the Post a firm “whack” to lock the **Cross Brace** in place. A small slot cut into each end of the **Cross Brace** and the tab cut-outs in the side of the **Post**, provide a locking mechanism for the two components.

**STEP 2** - Insert the opposite end of the **Cross Brace** into the top small cut-out tab in the side of the second **Post** and lock into place.

**STEP 3** - Take the second **Cross Brace** and perform the exact procedure as steps one and two. You may have to bend the **Cross Brace** to make the final top connection. When this step is complete, the braces should cross in the middle (see drawing).

**STEP 4** - Line up the center holes in the **Cross Braces**. Take the **Nylon Bolt** and slide it through the two holes so that the threads stick out the opposite end. Now take the **Nylon Nut** and thread it onto the **Nylon Bolt**. You will only need to finger tighten the nut so that it is snug.

**STEP 5** - Check all connections on the Garden Frame Assembly to make sure they are tight and locked in place.

**STEP 6** - Repeat steps 1 through 5 for second set of **Pipe Support Triangles**.



**NOTE:** Do Not bolt braces together until STEP 4.

## B. INSTALLING PIPEHOLDER BRACKETS and ATTACHING GROWING CHAMBERS to GARDEN FRAME ASSEMBLY

| Material Check List: |                                      |    |                                |
|----------------------|--------------------------------------|----|--------------------------------|
| 6                    | 6" diameter Growing Chambers 8' long | 12 | Pipeholder Brackets            |
| 12*                  | 1" Square Bracket Rubbers            | 12 | 5/16" Nylon Nuts               |
| 12                   | 1 ¼ " x 5/16" Nylon Bolts            |    |                                |
| 6                    | Black Rubber End Caps - Male         | 6  | Black Rubber End Caps - Female |

### 1. INSTALLING PIPEHOLDER BRACKETS (Please refer to drawing B1-1)

**STEP 1** - Mount the **Pipeholder Brackets** at the pre-drilled hole sights on each angle brace (refer to Drawing).

**STEP 2** - Attach each **Pipeholder Bracket** with a 1 ¼ " **Nylon Bolt**. You will only need to finger tighten the **Nylon Nut** so that it is snug. Repeat this step for all **Pipeholder Brackets**.

**STEP 3** - Wipe down the inside of the **Pipeholder brackets** to ensure a clean surface. Affix two **Square Bracket Rubbers** to the inside of the **Pipeholder Brackets** at one end of the unit only. This facilitates turning/sliding the **Growing Chambers** by one person.

\* **Extra Square Bracket Rubbers** can be attached to the opposite side to secure the **Growing Chambers** for larger, top-heavy plants.



**NOTE:** To prevent **Square Bracket Rubbers** from tearing from the surface, it is important to pull outward on the **Pipeholder Bracket** before moving the **Growing Chamber**.

## **B. INSTALLING PIPEHOLDER BRACKETS and ATTACHING GROWING CHAMBERS to GARDEN FRAME ASSEMBLY (cont.)**

### **2. ATTACHING GROWING CHAMBERS**

**STEP 1 - (Please refer to Drawing B2-1).** Arrange Garden Frame Assembly in approximate position.

**STEP 2 - (Please refer to Drawing B2-1).** Take each **Growing Chamber** and clip it into the **Pipe Holder Brackets**. Make sure the holes cut for the **Mesh baskets** are centered and facing upward.

**STEP 4 – (Please refer to Drawing B2-2).** Slip the **Male Rubber End Caps** onto the Drain End of the Growing Chambers. Slip remaining **Female Rubber End Caps** onto the opposite of the Growing Chambers.

**STEP 5 –** Tighten a **Large Hose Clamp** around each **Rubber End Cap** using a **SCREWDRIVER**.

## C. NUTRIENT TANK, PUMP & FILTER ASSEMBLY

| Material Check List: |                                 |    |                                   |
|----------------------|---------------------------------|----|-----------------------------------|
| 1                    | Eco Plus 230 Pump               | 1  | Eco Filter                        |
| 1                    | 30 gallon Nutrient Tank c/w Lid | 1  | CRL5 Filter Screen                |
| 1                    | 2" Drain Manifold c/w End Cap   | 12 | ¼" Float Hose                     |
| 1                    | 2" Drain Extension – 3'         | 1  | 2" Rubber Elbow                   |
| 4                    | PVC Plugs                       | 1  | 2" Rubber Grommet                 |
| 1                    | ¾" Rubber Grommet               | 1  | 1" x ¾" Reducing Bushing          |
| 1                    | 1" Washer                       | 1  | ¾" 90 Street Elbow                |
| 1                    | Suction Hose Kit                | 1  | ¾" x ¾" Transition Nipple         |
| 1                    | Float Assembly                  | 1  | ½" twist lock Female Hose Adapter |
| 1                    | 1" Nipple x Close               | 1* | 5/16 Rubber Grommet               |
| 1                    | ¾" Hose Wye w/ Filter Hose Cap  |    |                                   |

### 1. PUMP & FILTER ASSEMBLY SETUP (Please refer to drawing C1-1)

**Note: Use teflon tape where indicated by an \* in Drawing C1-1**

**STEP 1** - Screw the **1" Nipple x Close** into the Pump Inlet.

**STEP 2** - Screw the **Filter** onto the **1" Nipple x Close**.

**STEP 3** - Attach **Suction Hose Kit** to the **Filter**.

**STEP 4** - Screw the **1" x ¾" Reducing Bushing** into the Pump Outlet at the top of the pump.

**STEP 5** - Screw the **¾" Street Elbow** into the **Reducing Bushing**.

**STEP 6** - Screw the **Transition Nipple** into the **¾" Street Elbow**.

**STEP 7** - Screw the **½" twist lock Female Hose Adapter** onto the **Transition Nipple**.



## C. NUTRIENT TANK, PUMP & FILTER ASSEMBLY (cont.)

### 2. NUTRIENT TANK SETUP and PLACEMENT (Please refer to drawing C2-1)

**STEP 1** - Place the **Pump & Filter** below the drain holes on the **Male End Caps**.

**STEP 2** - Take the **2" Rubber Grommet** and wet the inside with soapy water. Insert one end of the ABS Drain Extension approximately  $\frac{1}{2}$ " into the 2" Rubber Grommet so that it is snug. With the two now attached, insert the 2" Rubber Grommet into the pre drilled drain hole of the Nutrient Tank. A twisting action while applying forward force will work here. Push 2" Rubber Grommet all the way in up to its shoulder. Leave approximately 20" of 2" pipe extending from the Nutrient Tank.

**STEP 3** - Place the Nutrient Tank underneath one bank of growing chambers with the Drain Extension facing the drain end of the garden as in the Drawing.

**STEP 4** - Now that the Tank and Drain Extension are in place, attach the **2" Rubber Elbow** to the outer end of it.

**STEP 5** - Take the Drain Manifold and attach it to the other end of **the 2" Rubber Elbow**. (Use same method as above) Make sure the drain intake holes are facing up and centered at the drain end of the garden. You may need to adjust the Drain Manifold and Nutrient Tank to properly fit. (See Drawing)

**STEP 6** – Attach the **Suction Hose Kit** to the Nutrient Tank as follows:

- Detach the Screen and Check Valve from the end of the Suction Hose Kit
- Insert the Suction Hose Kit end through pre-cut hole in Nutrient Tank
- Slide 1" Rubber Washer over the threaded end of the Suction Hose Kit on the inside of the Nutrient Tank
- Re-attach Screen and Check Valve to Suction Hose Kit

## C. NUTRIENT TANK, PUMP & FILTER ASSEMBLY (cont.)

### 3. FLOAT ASSEMBLY

#### **PREFERRED** OPTION 1 of 2:

(Please refer to Drawing C3-1). To maintain Nutrient Tank level, we have provided a **Float Assembly**. By using this with a food grade plastic barrel or plastic garbage can (not included) your nutrient level will maintain itself. **Drill a 3/8" hole near the bottom of the backup barrel. Insert a 5/16" grommet and then insert the 1/4" float hose. Attach the other end of the float hose to the float assembly as per drawing. (Siphoning should not be required.)** Once the Nutrient Tank has been filled, fill the barrel with water, half strength nutrients, and pH adjust.

#### OPTION 2 of 2:

(Please refer to Drawing C3-1). To maintain Nutrient Tank level, we have provided a **Float Assembly**. By using this with a food grade plastic barrel or plastic garbage can (not included) your nutrient level will maintain itself. Once the Nutrient Tank has been filled, fill the barrel with water, half strength nutrients, and pH adjust. **Weight one end of the float hose to the bottom of the barrel and siphon the other end. When water starts to flow, attach the float hose to the float as per drawing.**

**Note:** We use only half-strength Nutrient for the barrel because the plants generally use up twice as much water, as nutrients. If you use full strength in the barrel, the nutrient strength in the nutrient tank would become stronger each day—possibly too strong for your plants—and may cause burning.

BETTER TO BE SAFE THAN BURNT!

## D. FEED LINE ASSEMBLY

### Material List:

|    |   |    |  |
|----|---|----|--|
| 6  | ½" Back Flushing twist lock End Caps                                      | 1  | Punch                                      |
| 6  | ½" Black Vinyl Tubing at 89" long   | 5  | ½ " twist lock Tees                        |
| 4  | ½" Black Vinyl Tubing at 9" long (Option A)<br>OR 4 @ 21" Long (Option B) | 48 | 15" lengths of .220 Poly<br>Spaghetti Line |
| 2  | ½" Black Vinyl Tubing at 16" long   | 48 | Black Microjet Spray Heads                 |
| 1  | ½" Black Vinyl Tubing at 18" long   | 48 | 5/16" Rubber Grommets                      |
| 18 | 26" lengths of .075 Poly Spaghetti Line                                   | 2  | ½ " twist lock Elbows                      |
| 18 | Cordlocs  |    |  |

### 1. ASSEMBLE PLUMBING HARNESS (Please refer to drawing D1-1)

Assemble the **Plumbing Harness** using the **Black Vinyl Tubing**, **twist lock Tees**, **twist lock Elbows** and **twist lock End Caps**. Follow the layout in drawing D1-1. You will have to press firmly to insert the **Tees** and **Elbows** into the **Tubing**. Once they are properly inserted, twist the cap on the **Tees**, **Elbows**, and **End Caps** and secure finger tight. Permanently tighten elbows and tees and end caps with pliers once harness has been completely assembled on the garden and to the pump. **CAUTION: Do Not Over-Tighten.**

### 2. CORDLOC FASTENERS (Please refer to drawing D2-1)

Use 18 pieces of **.075 Spaghetti Line** pre-cut to 26" long. Tie a small knot at one end of each length. Thread the lead end through the **Cordloc** until it stops at the knot (see drawing).



**NOTE:** You will probably notice the **Cordlocs** appear to be jammed open (they are NOT broken but pre-loaded). Squeeze the **Cordloc** until you hear a "CLICK," then release the **Cordloc**. The Cordloc spring has been activated and is now functional. This "pre-loaded" feature is to make it easier to initially adjust the Cordloc without having to hold "SQUEEZE" it open.

## D. FEED LINE ASSEMBLY (cont.)

### 3. ATTACH PLUMBING HARNESS TO GROWING CHAMBERS

**STEP 1 - (Please refer to drawing D3-1).** Place the Plumbing Harness in approximate position as in drawing.

**STEP 2 - (Please refer to drawing D3-2).** Loop the Cordloc Fastener around the **Growing Chamber** and Plumbing Harness. Thread the lead-end of the **Spaghetti line** back through hole in **Cordloc**. Pull on the lead-end of **Spaghetti Line** to tighten and secure Plumbing Harness in place. Placing the knotted end of the Cordloc Fastener just below the plumbing harness to help keep the Plumbing Harness secured in place.

**STEP 3 - (Please refer to drawing D3-3).** Connect the two Plumbing Harnesses together with the ½" twist lock Tee. Take the 18" piece of ½" Vinyl Tubing and attach one end to the ½" twist lock Tee and the other end to the ½" twist lock adapter on the Pump Outlet. (This may be cut to desired length)

**STEP 4 -** Check each connection on the Plumbing Harness to make sure it is tight.

### 4. SPAGHETTI LINE ASSEMBLY

**STEP 1 - (Please refer to drawing D4-1).** Insert **.220 Spaghetti Line** into **5/16" Rubber Grommets**. Then thread a **Microjet Sprayhead** into the **Spaghetti line** (see drawing). Repeat for all 48 Sprayheads.

**STEP 2 - (Please refer to Drawing D4-2).** Look at the hole layout drawing before poking holes in the **Black Vinyl Tubing**. Use ONLY the supplied **Punch** to poke holes into the Plumbing Harness **Black Vinyl Tubing**. Twisting the **Punch** while applying quick downward pressure is a suggested technique to effectively punch holes. You should hear a "SNAP" when the hole has been punched.

**STEP 3 - (Please refer to Drawing D4-3).** Insert the Spaghetti Line into the **Black Vinyl Tubing** RIGHT AFTER you punch the hole. Next, insert the **Sprayhead** and **Rubber Grommet** into the 3/8" holes cut into the **Growing Chambers**. Repeat this step one hole at a time. (Wetting the tip with soapy water and using a twisting motion while applying downward pressure is a suggested technique to effectively insert the **Spaghetti Line**).

## E. DRAIN PLUMBING ASSEMBLY

(Please refer to drawing E-1)

| Material Check List: |                              |     |   |
|----------------------|------------------------------|-----|---|
| 2                    | 26" .075 Poly Spaghetti Line | 20' | of 3/4" Flex Hose to be cut into<br>10 pieces: 2 x 2', 2 x 3', 2 x 5' |
| 4                    | Cordlocs                     | 10  | 3/4" Rubber Grommets  |
|                      |                              | 4   | 1/2" PVC Plugs  |

**STEP 1** - Insert 3/4" **Flex Hose** into the drain end of one **Male Rubber End Cap**.

**STEP 2** - Repeat for the remaining **Male Rubber End Caps**.

**STEP 3** - Insert 3/4" **Rubber Grommet** into each hole of Manifold. Lubricate the inside of the Rubber Grommets with soapy water.

**STEP 4** - Insert a 1/2" **PVC Plug** in each spare hole in Manifold.

**STEP 5** – Insert the ends of the **Flex Hose** into the Manifold using a twisting motion with down force.

**STEP 6** – Cut two 26" lengths of .075 Spaghetti Line in half. Assemble 4 **Cordloc** Fasteners to help secure drain lines neatly in place (see Drawing).

## TESTING YOUR SYSTEM

- 1 Fill **Nutrient Tank** with plain water.
- 2 Remove Pump Housing Priming Plug (**see Drawing C1-1**) and make certain water level is at the top of the opening. If not, wait several minutes--housing will fill on its own or, you may prime pump manually with water.

**CAUTION: PUMP SHOULD NEVER BE RUN DRY OR  
WARRANTY WILL BE DECLINED!**

- 3 Check all fittings for tightness:
  - **All nuts on Elbows and Tees**
  - **End caps on Plumbing Harness**
  - **End caps on Growing Pipes**
  - **Cap on Filter**
- 4 Plug in **Pump** and turn on.  
Tighten any loose fittings. There may be some dripping where **Spaghetti lines** go into the ½" **tubing**. This will probably stop within 24 - 48 hours.
- 5 Run system for a while to help flush it out, then drain (see draining instructions on following page).
- 6 Refill and add Nutrient and pH adjust.
- 7 Fill the Reservoir Barrel, add half-strength nutrients and pH adjust.

## OPERATION

Now that you have your garden up and running, it is time for some fine-tuning.

- Make sure the **Sprayheads** are spraying laterally along the tubes (see *Small Components Drawing*). Tip: Line up edge of **Sprayhead** with the print on the side of the **Spaghetti tubing**. You can then see the print on the outside of the **Grow Pipe**
- The **Filter Screen** on the **Filter** SHOULD be cleaned daily to prevent **Sprayheads** from clogging.
- Clogging is more likely to occur in the first week of operation due to small particles of plastic.
- The distance the **Sprayhead** goes into the **Growing Chamber** depends upon the type and age of the plant, e.g. a young plant requires the **Sprayhead** to be near the top of the **Chamber** so the baskets themselves are being misted. As the plant matures and roots begin to fill the **Chamber**, the **Sprayheads** can be lowered into the **Chamber** or turn 90° to limit the amount of spray on the baskets.
- Adjustments may be required along the way
- If **Sprayheads** become clogged, remove and clean with a **Toothbrush**.
- We recommend using *Hydrogen Peroxide* at all times when growing. This keeps all the **Feed lines** and **Sprayheads** clean and *oxygenates* the plants as well.
- It is recommended to back flush **Feed lines** after each crop. Use **Hose adapter** for this process. See *Small Components Drawing*. Remove all **Sprayheads** before back flushing. Place **Spaghetti lines** into **Grow Chamber** without **Sprayheads**.
- To drain system, switch **Pump** OFF. Screw a garden hose to **Hose Bib** on **Filter**. Turn off **Ball Valve**. Switch **Pump** ON and pump out **Tank**. **CAUTION: DO NOT RUN PUMP DRY OR WARRANTY WILL BE DECLINED.**
- Each time you change nutrients (once a week) you should clean out the **Nutrient Tank**.
- When working with an Aeroponic System we recommend using ½ to ¾ strength nutrient of whatever the manufacturer of the nutrient suggests.

**BETTER TO BE SAFE THAN BURNT!**

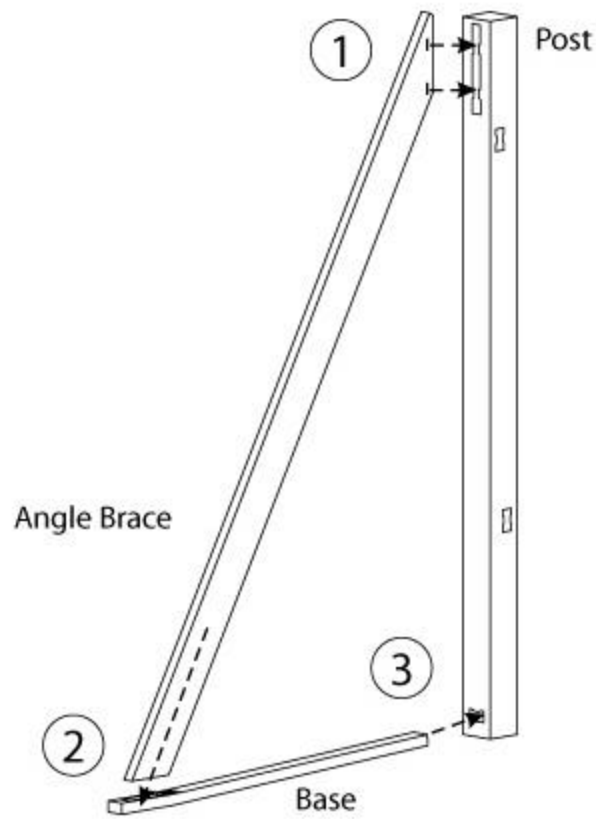
***Thank you for your support and have fun!***

## USER RECOMMENDATION

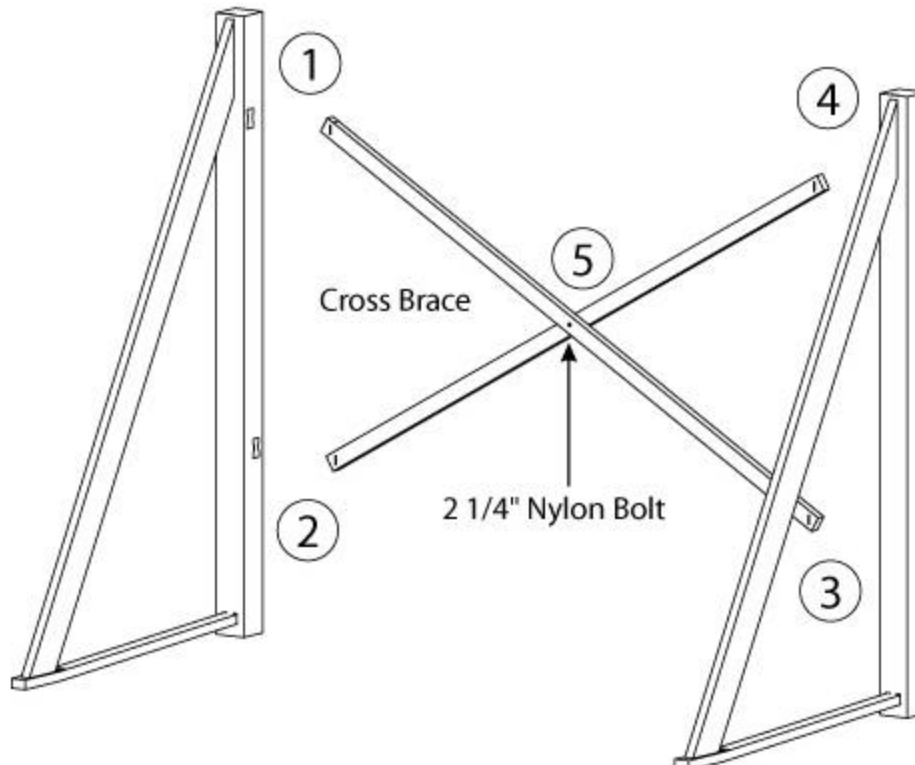
1. **READ** the Instruction Manual. Problems can be avoided if the Instruction Manual is followed carefully.
2. The Timer should be set for short cycles when new plants are installed, i.e. 2 minutes on, 5 minutes off. As plants develop larger root mass, increase On Time and Off Time, i.e. 5 minutes on, 15 minutes off. Please see Timer Instructions for any questions regarding setting of timer. Note that the times indicated are only approximate, different plants may need different settings. PLEASE READ INSTRUCTION BOOKLET FOR T1003 CYCLE TIMER.
3. When using a PPM Meter or Pen, and a good quality non-organic hydroponic grow fertilizer on an 18-hour light cycle, the recommended reading is 700 to 800 ppm. On a 12-hour light cycle using a good quality non-organic bloom fertilizer, the recommended level is 1000-1100 ppm. If not using a meter or pen, use nutrients at  $\frac{3}{4}$  of label instructions. Change nutrients every 5-7 days or when the total gallonage amount of makeup water exceeds the system gallonage.
4. The inline filter **SHOULD BE CLEANED DAILY** during the first two weeks of operation using a spray nozzle or tap pressure – then every other day until the end of the cycle. A bottlebrush works great!
5. Misting heads should be checked frequently. If any performance reduction is noticed, either clean your filter or use a nail or fine wire or toothbrush to clean the head at the spray point.
6. After each crop is completed, the tank should be drained, feed lines should be flushed with tap pressure, and 6" End Caps should be removed and tubes cleaned with a rag mop. Then rinse well.
7. If gro-rocks are used, they should be put into a 5-gallon pail and treated with  $\frac{1}{2}$  litre of Hydrogen Peroxide and water. Let stand for several hours, then rinse clean.
8. To clean flex hose effectively, stretch the hose out so that the inner grooves can be flushed clean of any trapped particles.
9. For cleaning, a 3% solution of Hydrogen Peroxide in a spray bottle works well as a disinfectant.



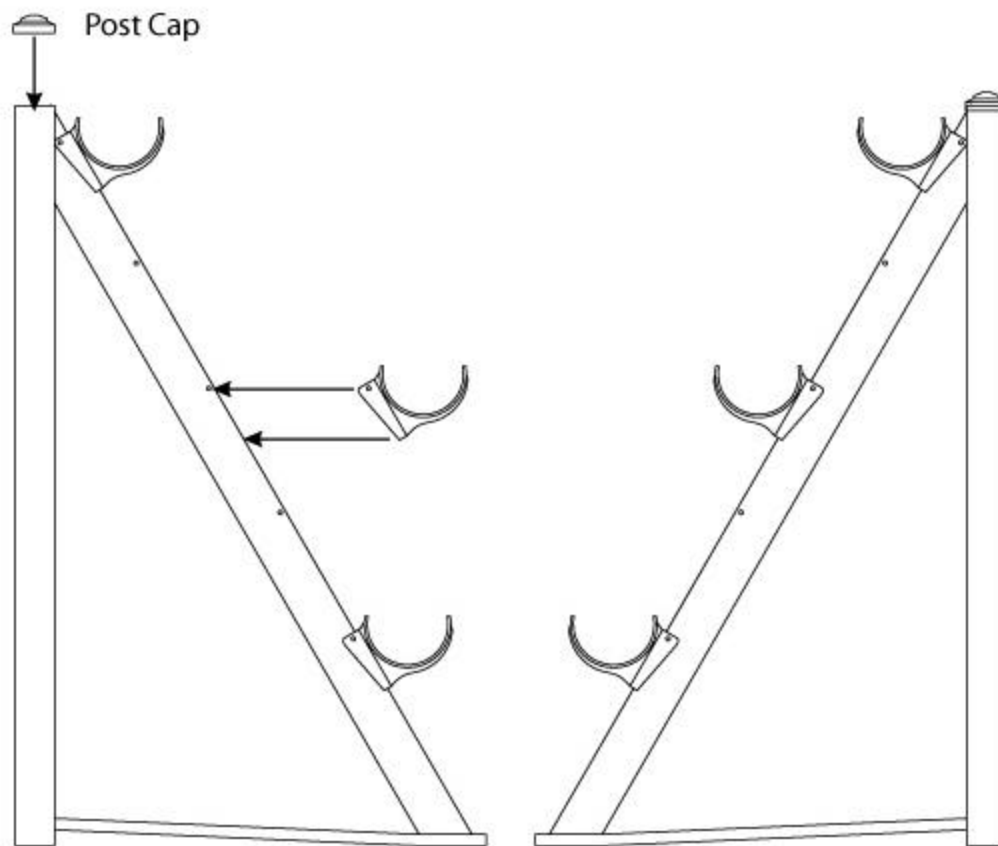
## DRAWING A1-1 Pipe Support Triangle



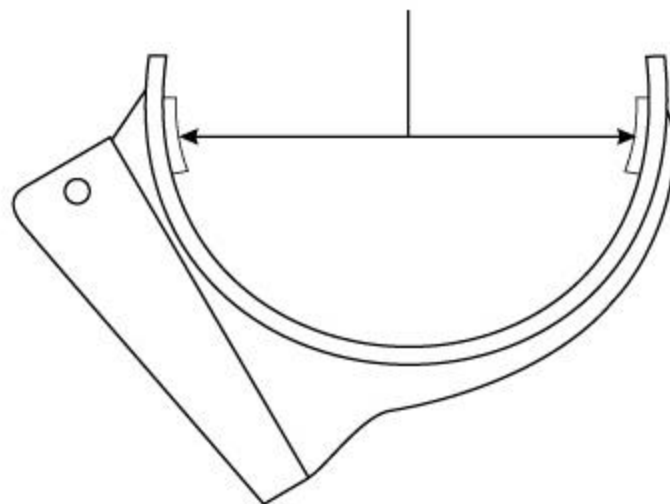
## DRAWING A2-1 Cross Brace



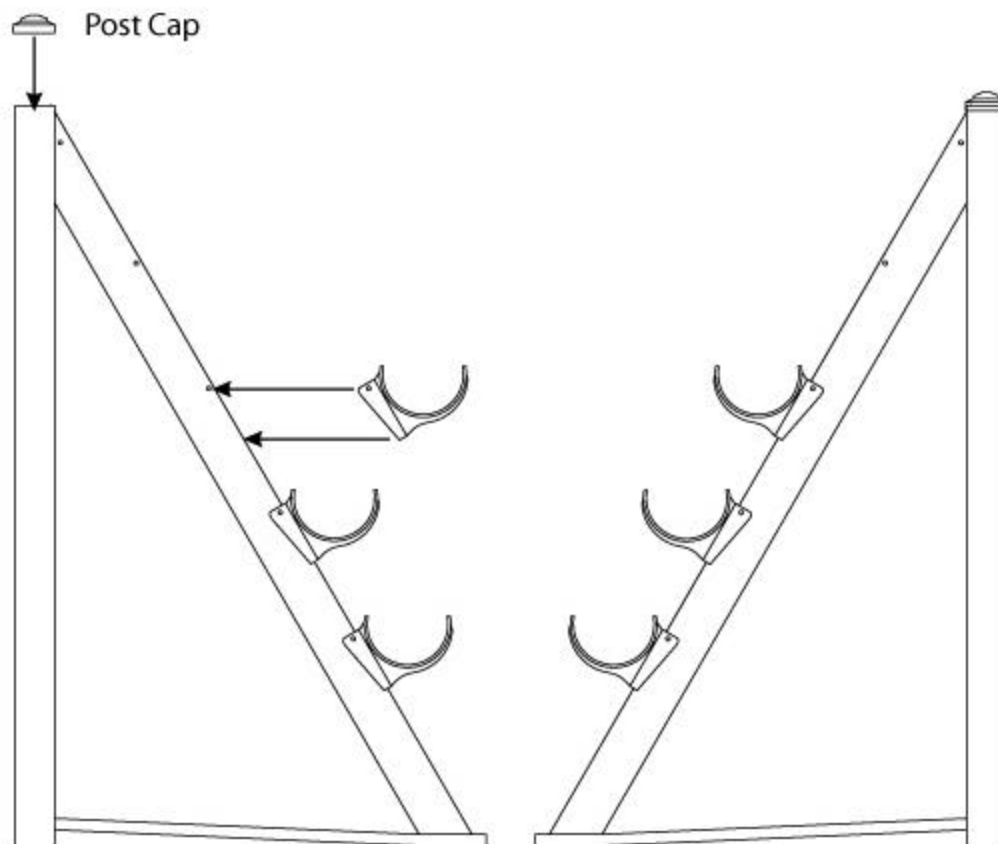
## DRAWING B1-1 Pipe Support Triangle (OPTION A)



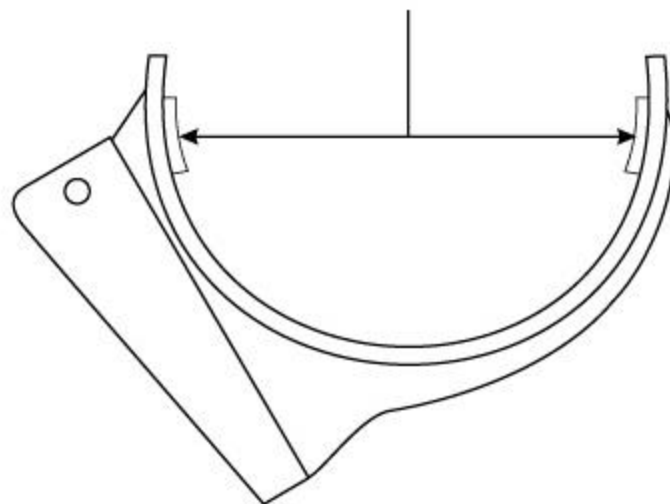
Place Square Bracket  
Rubber 1/2" down from  
top inside edge of bracket



## DRAWING B1-1 Pipe Support Triangle (OPTION B)

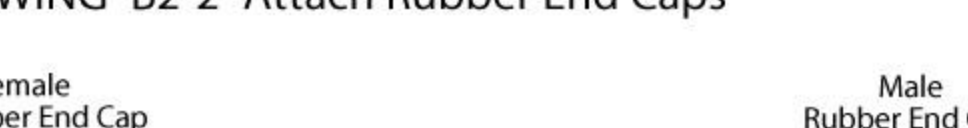


Place Square Bracket  
Rubber 1/2" down from  
top inside edge of bracket



A technical line drawing of a mechanical assembly. The drawing shows two main frames, one on the left and one on the right, both constructed from angled beams. The left frame has a horizontal beam at the top and a vertical beam on the left. The right frame has a vertical beam on the right and a horizontal beam at the bottom. A central component, which appears to be a cylindrical roller or pulley with a series of curved slots on its top surface, is positioned between the two frames. This central component is supported by a horizontal beam that is part of the left frame. The drawing is a black and white line art, showing the structural details of the assembly.

### DRAWING "B2-2" Attach Rubber End Caps



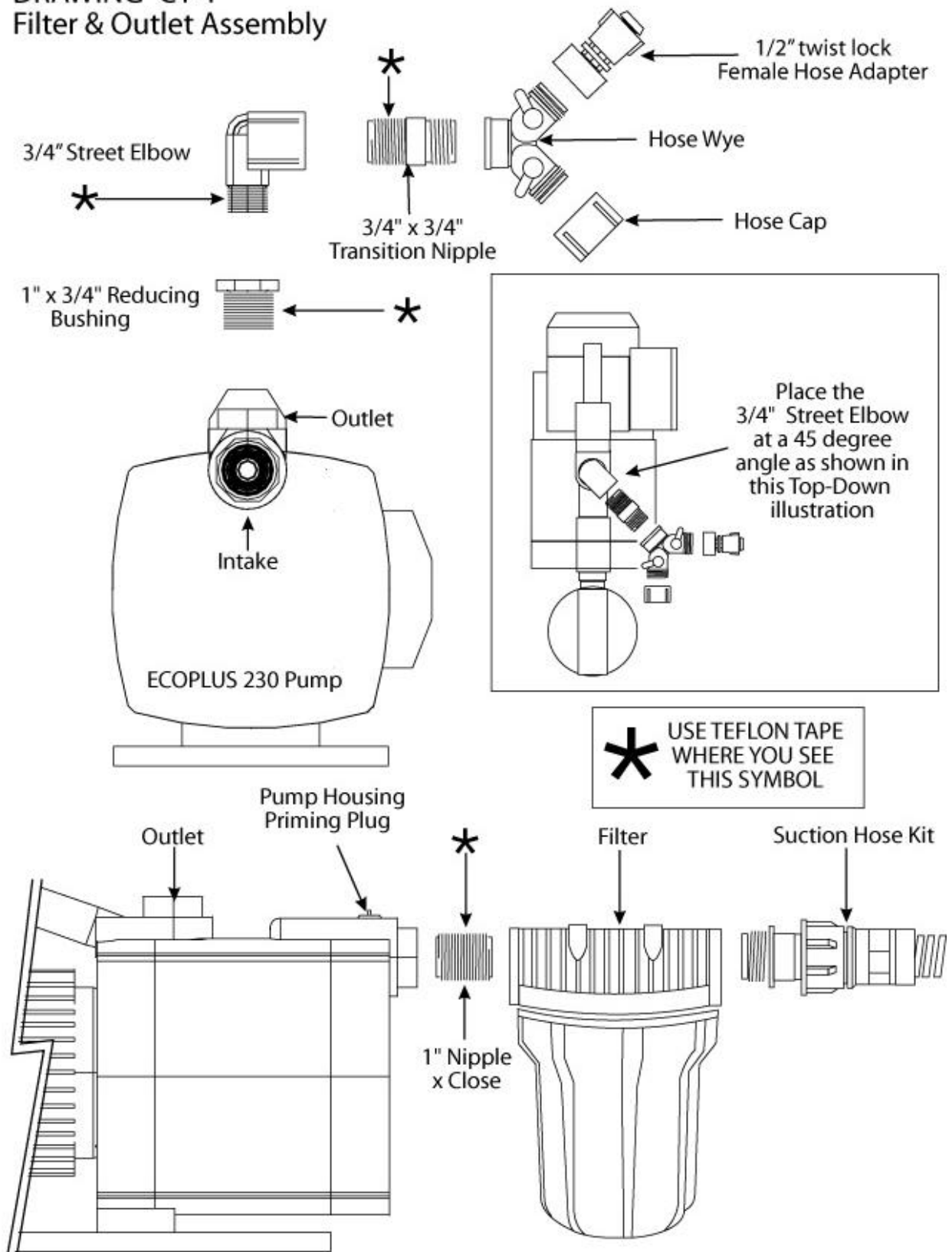
Female Rubber End Cap

Male Rubber End Cap

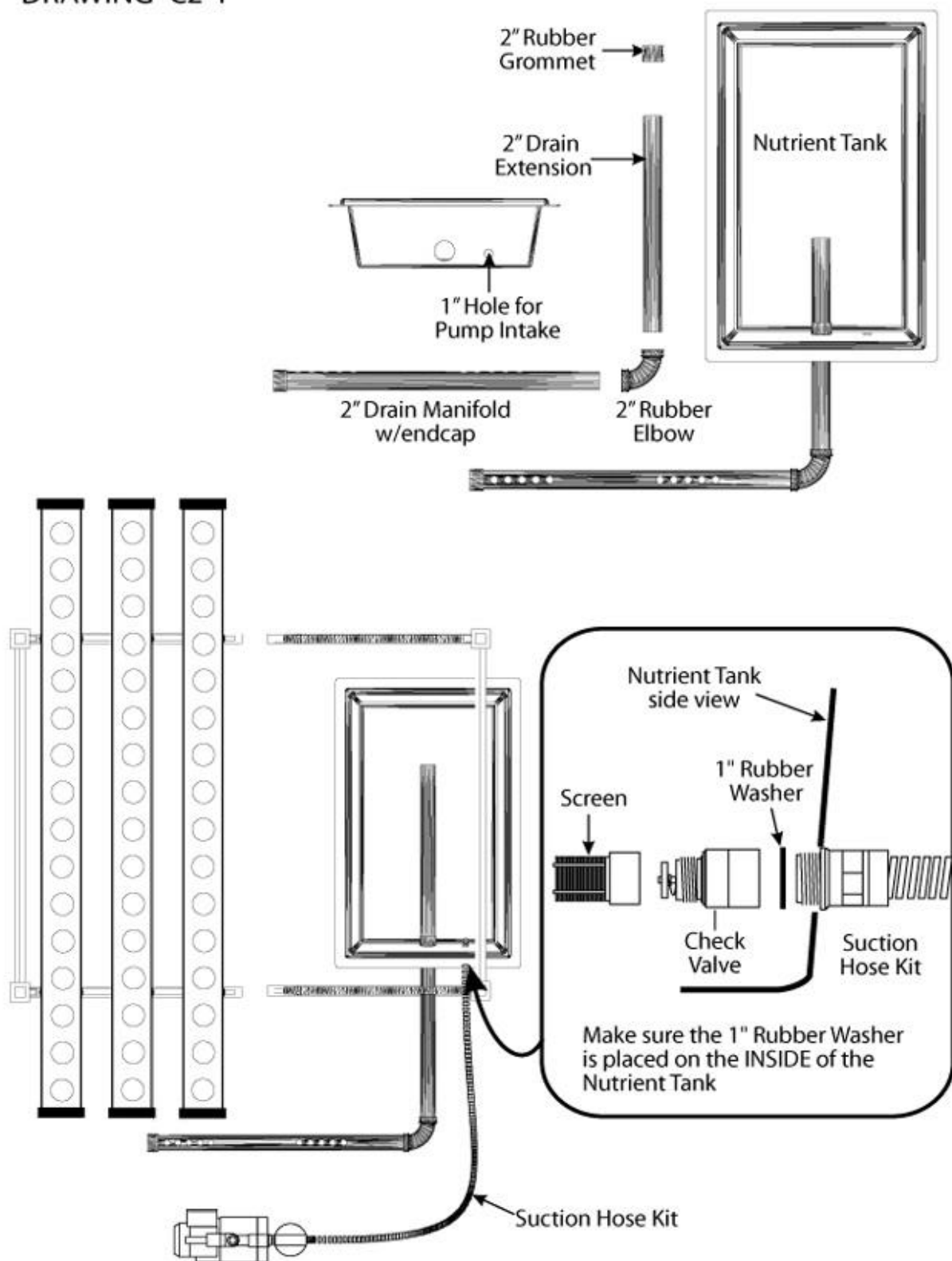
Growing Chamber

Large Hose Clamp

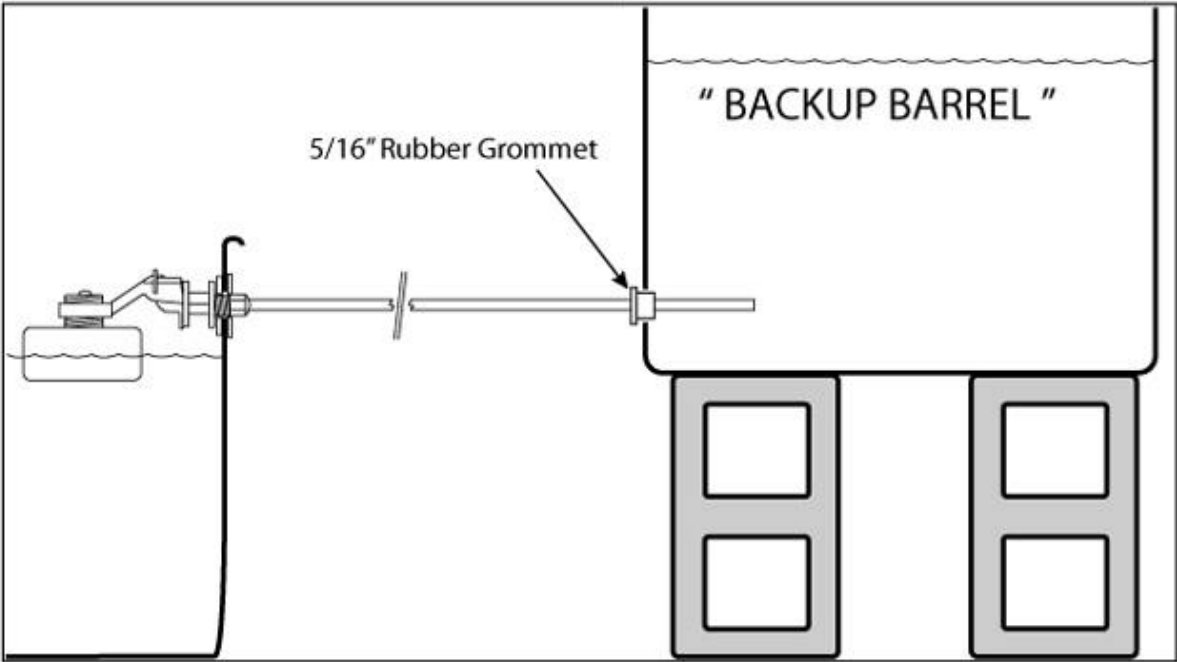
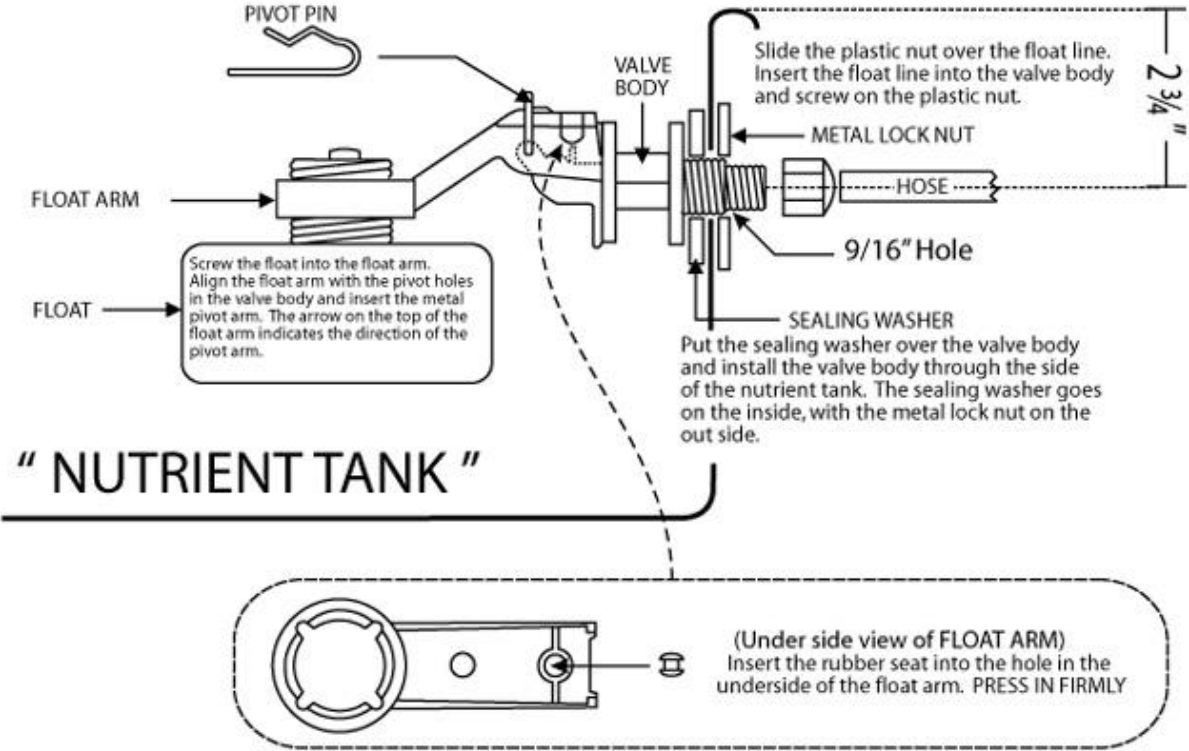
# DRAWING "C1-1" Filter & Outlet Assembly



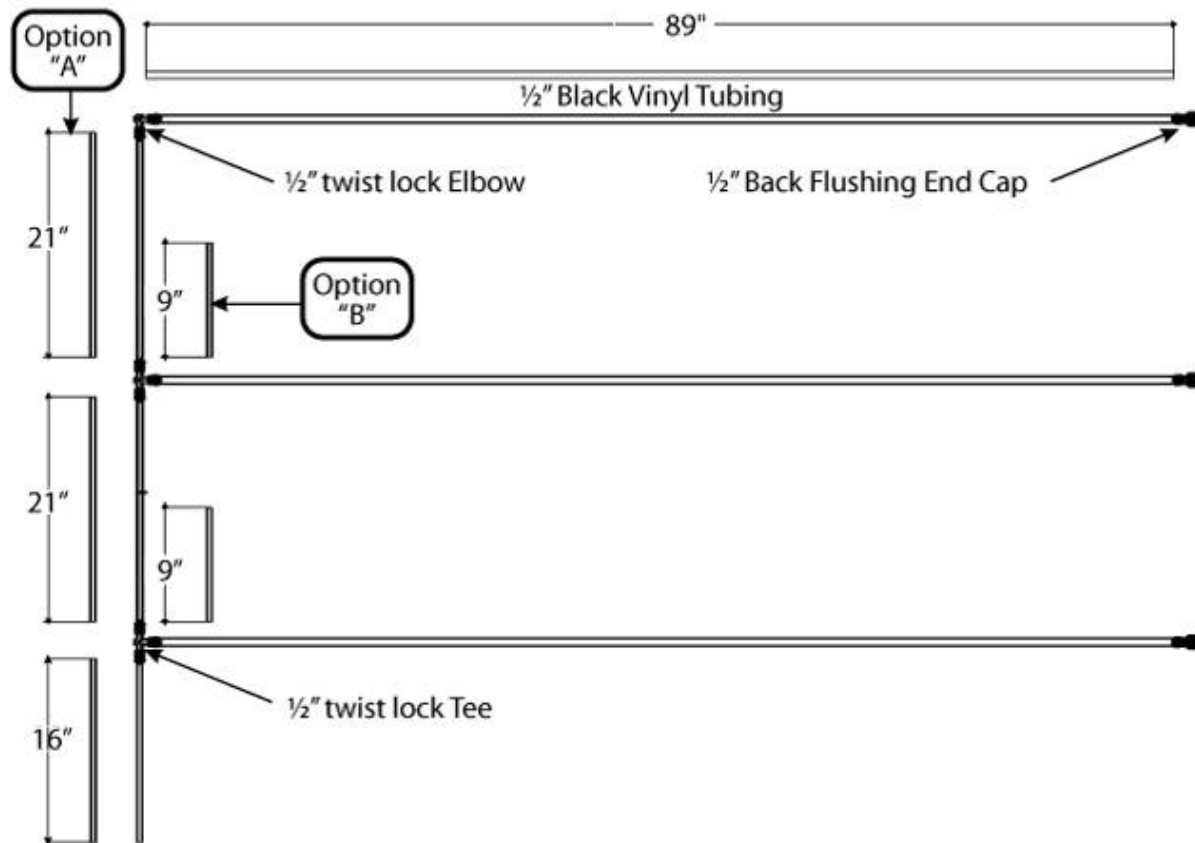
DRAWING "C2-1"



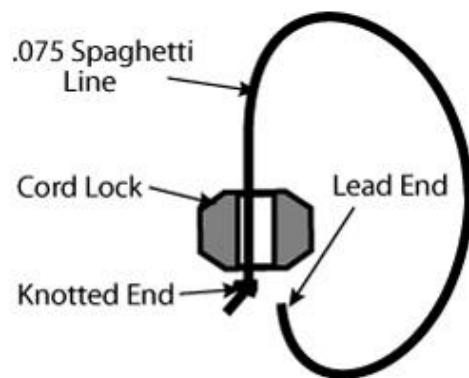
DRAWING "C3-1"  
Float Assembly & Components



Drawing D1-1



Drawing D2-1

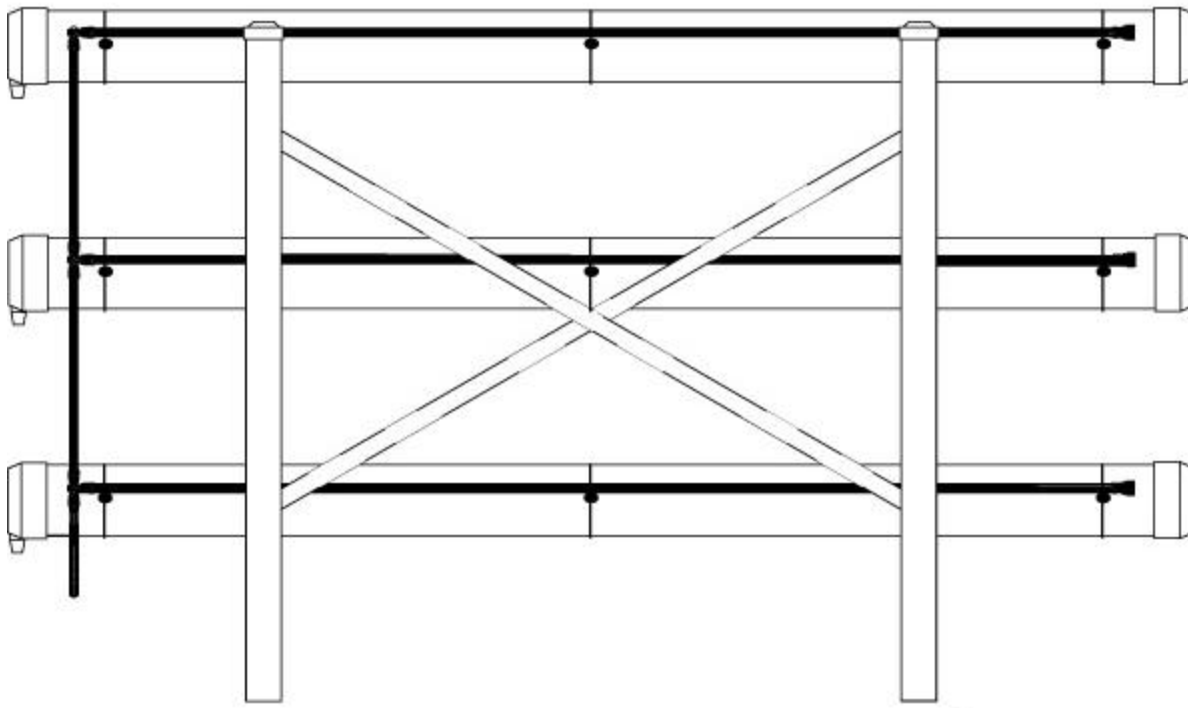


### Cordloc Fastener

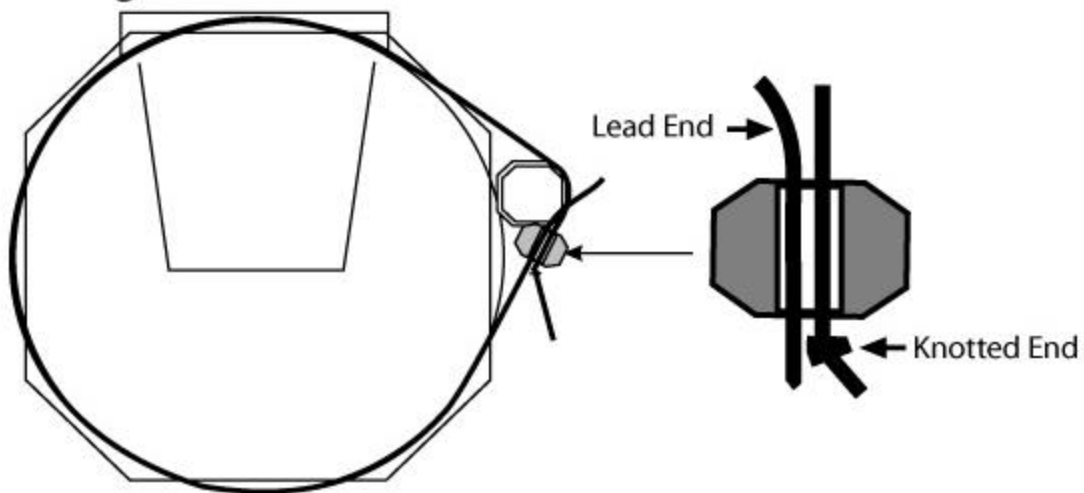
Thread the .075 Spaghetti Line through the Cordloc so that the Knotted End is facing downward. Make sure the Lead End is threaded behind the Knotted End or SLIPPAGE MAY OCCUR



Drawing D3-1

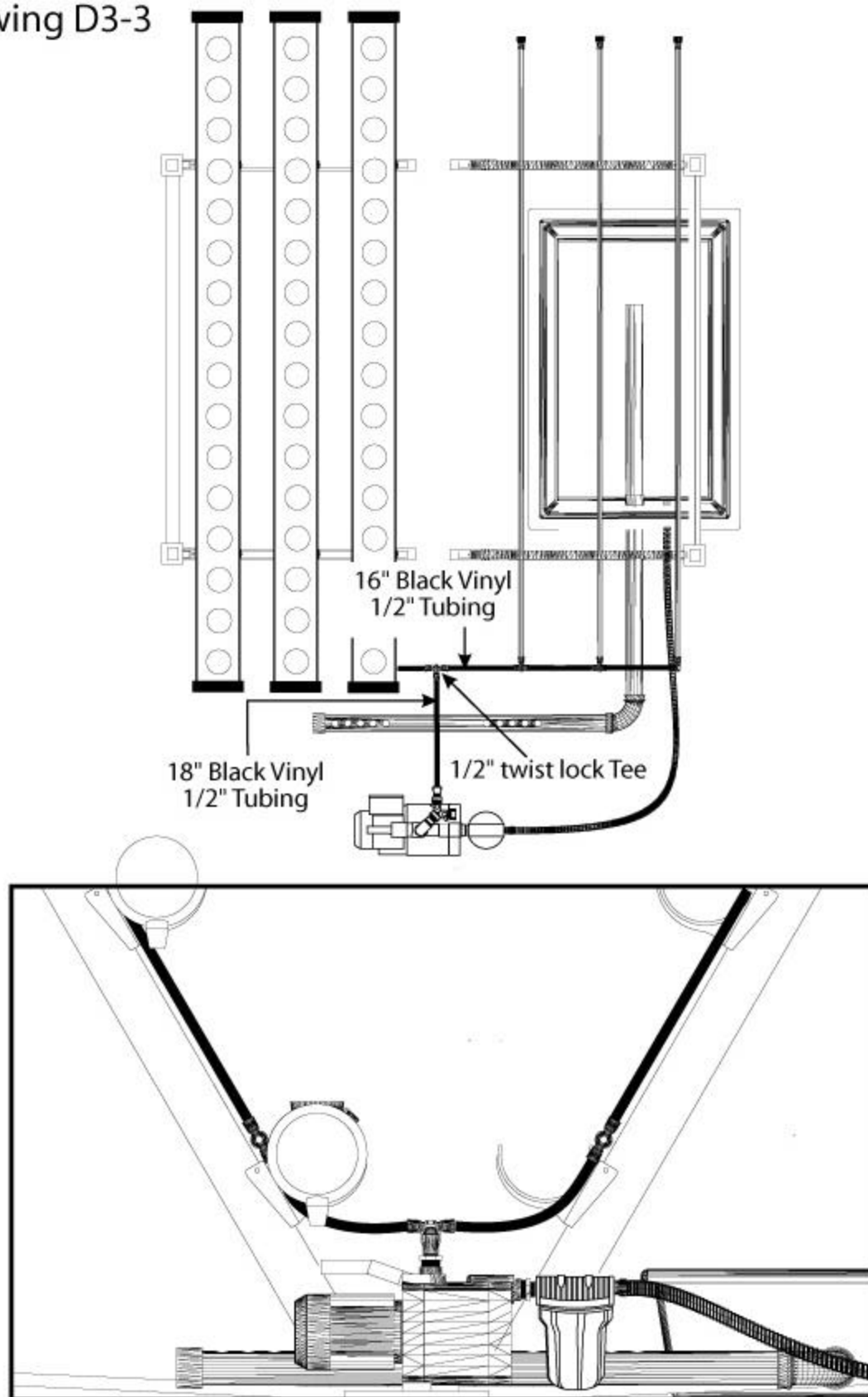


Drawing D3-2

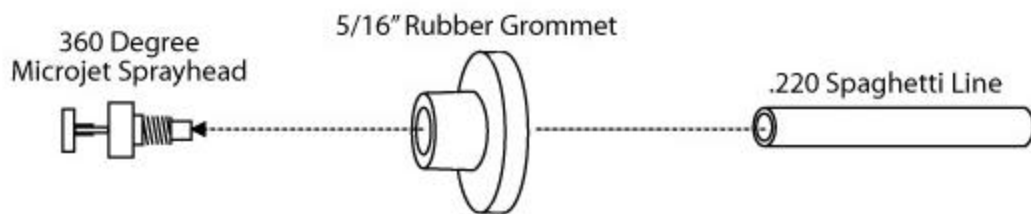


Thread the .075 Spaghetti Line through the Cordloc so that the Knotted End is facing downward. Make sure the Lead End is threaded behind the Knotted End or SLIPPAGE MAY OCCUR

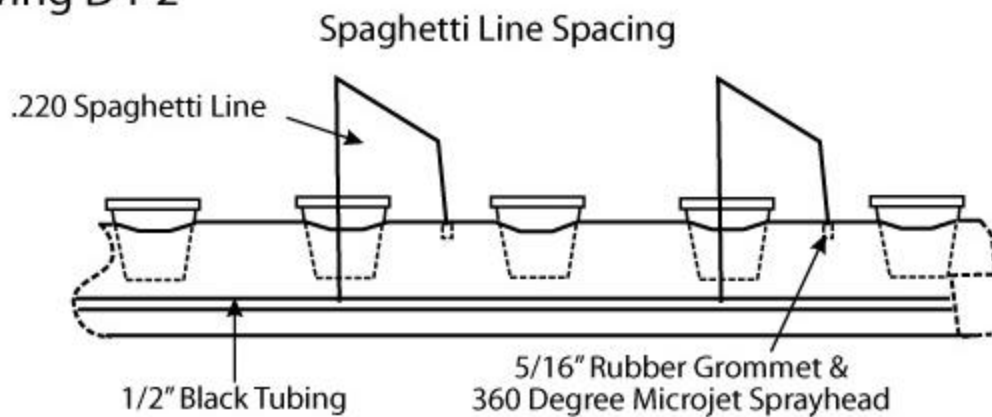
Drawing D3-3



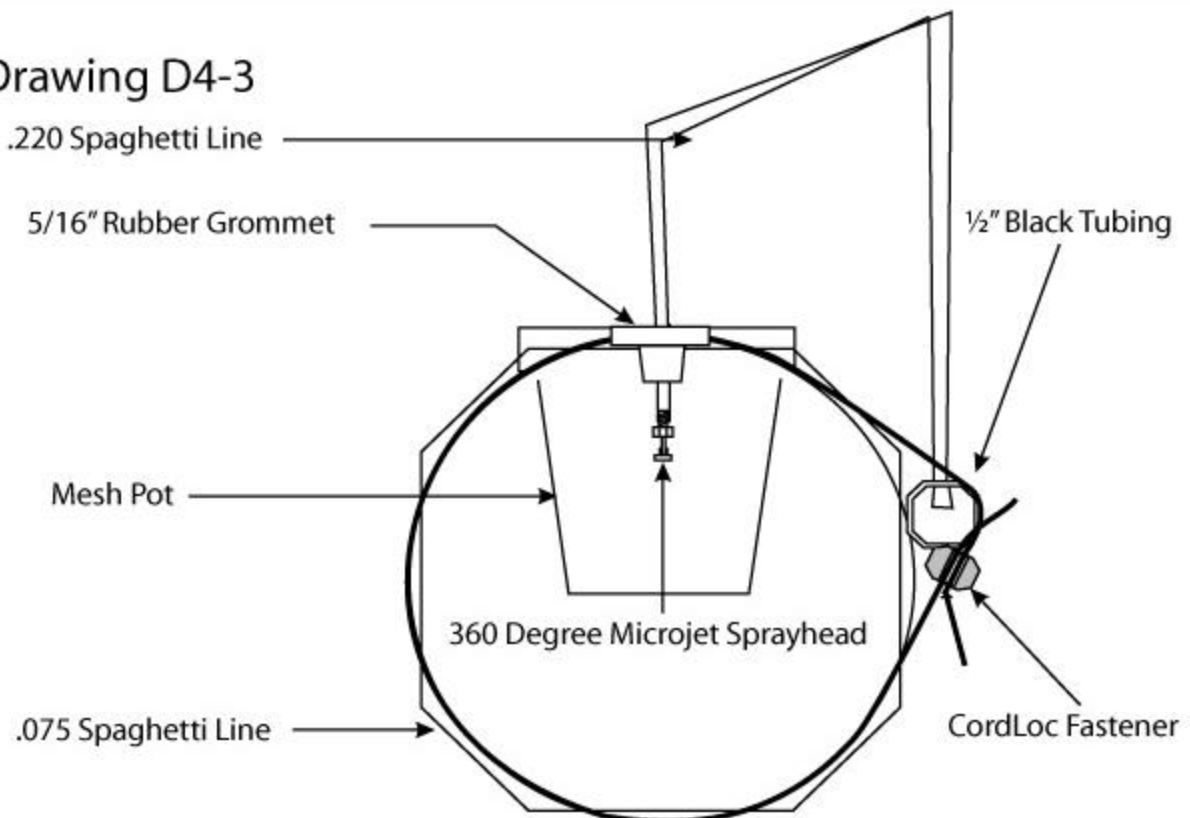
Drawing D4-1



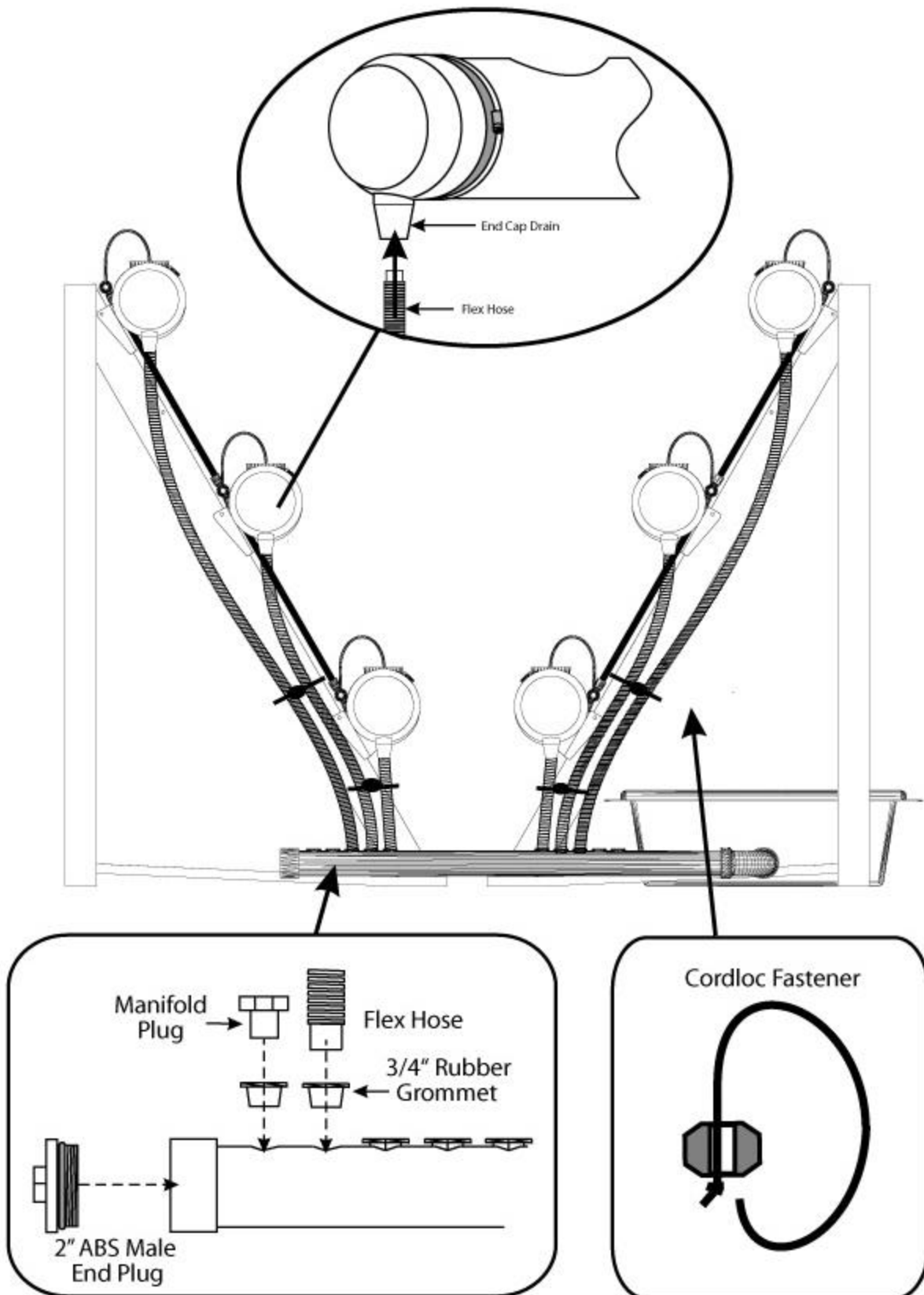
Drawing D4-2



Drawing D4-3



## DRAWING "E-1" Drain Plumbing



## SMALL COMPONENTS (Drawings not to scale)

