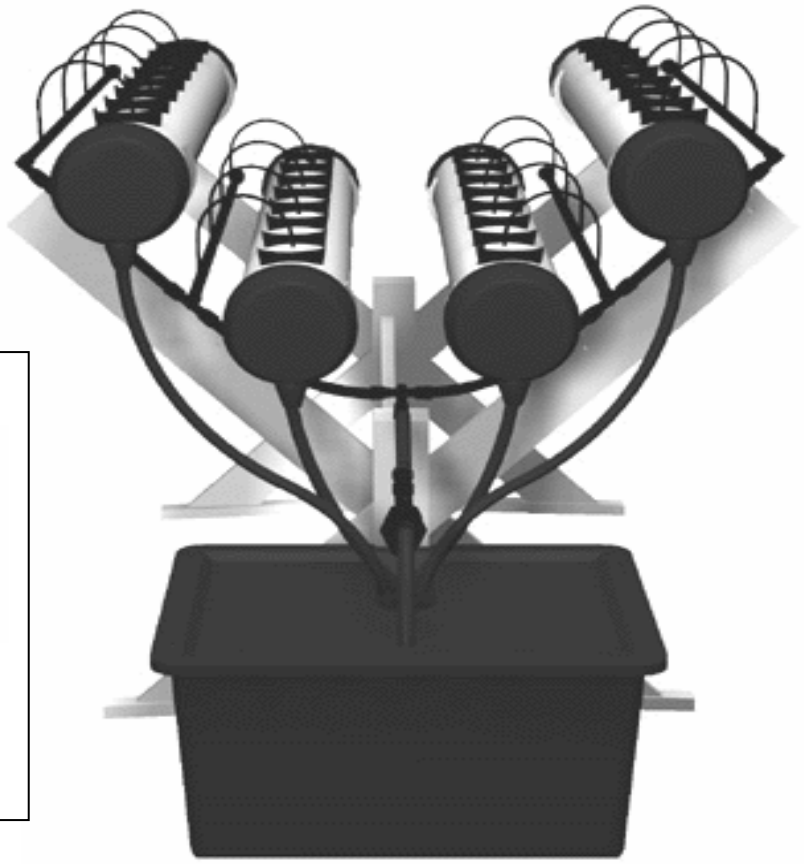
PlantTier Technology

32V



Manufactured & Distributed by:

725 Evans Court
Kelowna, B.C.
Canada
1-866-491-0255
www.extremegrowing.com

Revised May 15, 2005

WARNING: BEFORE PUTTING WATER PUMP INTO OPERATION FILL UP PUMP/HOUSING WITH WATER. THE PUMP MUST NEVER RUN DRY OTHERWISE WARRANTEE WILL BE DECLINED. READ FILLING INSTRUCTIONS BEFORE USE.

PIPE DREAMS 32. 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
- 5/16" Socket & Nut Driver (optional)
- 9/16" and 3/8" Drill Bit (Spade Bit)
- Jig Saw (to cut opening in Nutrient Tank **If not precut)**
- Water Pump Pliers
- Electric Drill (optional)
- Exacto Knife
- 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

If not, at least check out the headings on the following pages and refer to the instructions when you are confused

Comments and suggestions are always welcome.

One Complete 4 Tube Garden Kit contains:

PD32MATERIAL CHECK LIST					
	4	6" Diameter Tubes x 4'			**LARGE COMPONENT BAG**
	4	Support Angle Braces		2	1/2" Twist loc Female Hose Adaptor
	2	Upright Posts		1	1/2" Twist loc Tee x Female Hose Adapter
	2	Bases			
	2	Cross Braces		4	1/2" Twist loc Back Flushing Endcaps
	1	60 Litre Nutrient Tank w/Lid		2	1/2" Twist loc Tees
	32	3 1/2" Mesh Baskets		2	1/2" Twist loc Elbows
	4	Rubber Endcaps - Female		1	Olson Punch
	4	Rubber Endcaps - Male		1	Teflon Tape
	8	Pipeholder Brackets		1	Filter w/ Cap includes: 3/4" Shut-Off Valve w 2 Washers
	I	X-Stream g2700 Pump		10'	3/4" Flex Hose to be cut into 4 pieces:2 x 2' and 2 x 3'
	1	T1014 Cycle Timer		16	.220 x .170 Poly Spaghetti Line @ 15" Lengths
	4	1/2" Diameter Black Vinyl Tubing @ 48"		10	.075 Poly Spaghetti Line @ 26" Lengths
	1	Instruction Manual			
	SMALL COMPONENT BAG			5 PCE	1/2" Diameter Black Vinyl Tubing: 4 x 10" and 1 x 20"
	8	1 1/4" X 5/16 Nylon Bolts			
	1	21/4" x 5/16 Nylon Bolts		1	11/4" x 3/4" Reducing Bushing
	9	5/16" Nylon Nuts		1	3/4" PVC Street Elbow
	16	1" Bracket Rubbers		1	3/4" MHT x 3/4" MIPT N1 Transition Nipple
	2	Post Caps			
	10	Cordlocs			
	17	Mistheads (red)			
	17	5/16" Rubber Grommets			

A. GARDEN FRAME ASSEMBLY

Material Check List:			
4	Pipe Support Angles	2	Cross Braces
2	Upright Posts		
2	Base w/End Caps	1	2 1/4 " x 5/16" Nylon Bolt
2	Post Caps	1	5/16" Nylon Nut

1. BUILDING PIPE SUPPORT ANGLES

STEP 1 - (Please refer to drawing A1~1) Insert **Base** into the tab cut-out at the bottom of the **Post**. A sharp tap may be needed to initially slide the Base into the tab cut-out. Two small slots cut into the middle 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 slots line up with the tab cut-outs in the **Post**.

STEP 2 - (Please refer to drawing Al~2 and examples 1 & 2) Insert **Pipe Support Angle** into one of the high vertical cut-outs in the side of the **Post**. Guide the **Pipe Support Angle** through the **Post** and out the lower vertical cut-out on the opposite end. You may need to apply a sharp tap to help get past tight spots. This task may be made easier by turning the whole unit over and pushing the **Post** down over the **Pipe Support Angle** (see example 1). Two small slots cut into the sides of the **Pipe Support Angles** and the tabs in the higher vertical cut-outs, provide a locking mechanism for the two components. Make sure you guide the **Pipe Support Angle** into the cut-out in the **Base** before you lock the **Pipe Support Angle** to the **Post**. Once you have the first **Pipe Support Angle** properly locked into place, turn the unit over and repeat the same procedure for the second **Pipe Support Angle** (see example 2).

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

A. GARDEN FRAME ASSEMBLY (Cont.)

2. CONNECTING CROSS BRACE to PIPE SUPPORT ANGLES (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 cutouts 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 cutout 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.

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

B. INSTALLING PIPEHOLDER BRACKETS and ATTACHING GROWING CHAMBERS

Material Check List:			
4	6" diameter Growing Chambers 4'		
8	Rubber End Caps - 4 Male End Caps & 4 Female End Caps	8	5/16" Nylon Nuts
8	Pipeholder Brackets	8	1 1/4" x 5/16" Nylon Bolts
8*	1" Square Bracket Rubbers		

1. INSTALLING PIPE BRACKETS
(Please refer to drawing B1~1)

STEP 1 - Attach each **Pipeholder Bracket** with a 1 1/4**" Nylon Bolt**. Lineup the hole in the **Pipeholder Bracket** to the hole in the **Pipe Support Angle**. Slide the **Nylon Bolt** through the 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 **Nylon Nut** so that it is snug. Repeat this step for all **Pipeholder Brackets**.

STEP 2 - 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 end to secure the **Growing Chambers** for larger, top-heavy plants.


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**.

2. ATTACHING GROWING CHAMBERS

STEP 1 - (Please refer to Drawing B2~1) Arrange Garden Frame Assembly and **Nutrient Tank** in approximate positions.

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

STEP 3 - (Please refer to drawing B2~2) Slip the Male End Caps onto the Drain-End of the Growing Chambers. Slip the remaining Female Rubber End Caps, onto the other end of the Growing Chambers.

STEP 4 - (Please refer to drawing B2~2) Tighten a Large Hose Clamp around each Rubber End Cap using a SCREWDRIVER or 5/16" NUT DRIVER.

C. NUTRIENT TANK and PUMP & FILTER

Material Check List:

1	X-Stream G2700 Pump	1	1 1/4" x 3/4" Reducing Bushing
1	Shut off valve w/2 washers	1	3/4" PVC Street Elbow
1	Filter	1	3/4" MHT x 3/4" MIPT N I Transition Nipple
1	13 gal Nutrient Tank and Cover	2	1/2" twist lock female hose adapter
1	1/2" Black Vinyl Tubing at 18" long	1	1/2" twist lock tee female hose adapter

1. PUMP & FILTER ASSEMBLY (Please refer to drawing C1~1)

STEP 1 - The Filter and Pump can now be assembled as per Drawing C1~1.

2. NUTRIENT TANK SETUP and PLACEMENT

STEP 1 - (Please refer to drawing C2~1) The Pump and the **Filter Assembly** can now be placed into the **Nutrient Tank**. Place the **Nutrient Tank Pump & Filter** below the **Male Rubber End Caps** drain holes. The Tee on the Filter Assembly should face towards the garden (see drawing).

If you choose not to use a **Float Assembly**, you must maintain the water level daily. Note: If an external pump is used, see instructions and diagrams with **External Pump Kit**.

D. FEED LINE ASSEMBLY

Material Check List:			
4	1/2 " Black Vinyl Tubing at 48" long	4	1/2 " Back Flushing End Caps
4	1/2 " Black Vinyl Tubing at 10" long	2	1/2 " twist lock Elbows
1	1/2 " Black Vinyl Tubing at 20" long	2	1/2 " twist lock Tees
8	26" lengths of .075 Poly Spaghetti Line	16	5/16" Rubber Grommets
16	16" lengths of .220 Poly Spaghetti Line	8	Cordlocs
1	Punch	16	Red Microjet Spray Heads

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

STEP 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 twist lock Tees and twist lock **Elbows** into the **Tubing**. Once they are properly inserted, twist the cap on the **Tees, Elbows, and End Caps** to secure tightly.

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

STEP 1 - Take 10 pieces of **.075 Spaghetti**. Take EIGHT of the pieces and tie a small knot at one end. Thread the lead end through the **Cordloc** until it stops at the knot (See drawing). **NOTE**: The remaining 26" pieces of .075 Spaghetti Line will be used to secure the drain plumbing.

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. Use 2 Cordloc Fasteners for each **Growing Chamber**.

STEP 3 - (Please refer to drawing D3~1) Attach Plumbing Harness to the Tee on the **Filter Assembly**. Press firmly to make sure the connection is tight.

STEP 4 - Check each connection on the Plumbing Harness to make sure it is tight. Snug them up with pliers (Water Pump Pliers).

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).

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 Wrench** 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 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	3/4" Flex Hose at 24" lengths	2	Cordlocs
2	3/4" Flex Hose at 36" lengths	1	26" .075 Poly Spaghetti Line

STEP 1 - Push a 3/4" drain line into the **Black Rubber Drain End Cap** drain hole as in the drawing. (Wetting the end with soapy water will make this process much easier.)

STEP 2 - Repeat for the remaining Drain-End Rubber End Caps.

STEP 3 - Place the ends of the Flex Hose into the **Nutrient Tank.**

STEP 4 - Take two remaining 26" pieces of .075 Spaghetti line and cut in half and assemble two Cordloc Fasteners and attach to the drain lines as in the drawing.

TESTING YOUR SYSTEM

1. Fill **Nutrient Tank** with plain water

2. Check all fittings for tightness

   All nuts on Elbows and Tees

   End caps on Plumbing Harness

   End caps on Growing Pipes

   Pump Filter capped

3. Plug in **Pump**

Tighten any loose fittings. There may be some dripping where **Spaghetti lines** go into the 1/2" **tubing.** This will probably stop within 24 hours.

4. Run system for awhile to help flush it out, then drain. (see draining instructions on following page.)

5. Refill and add Nutrient and pH adjust.

Note: We use half strength Nutrient for the barrel because the plants are generally using 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!

If you choose not to use the float you must maintain water level daily.

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 Assembly** SHOULD be cleaned daily to prevent **Sprayheads** from clogging.

- 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 900 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**. 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, unplug **Pump**. Screw a garden hose to **Hose Bib on Filter**. Turn off **Ball Valve**. Plug **Pump** back in and pump out **Tank**.

- Each time you change nutrients (once a week) you should clean out the **Nutrient Tank**.

- When working with an Aeroponic System we recommend using 1/2 to 3/4 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 RECOMMENDATIONS

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 T1013 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 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. A bottle brush works great!

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.

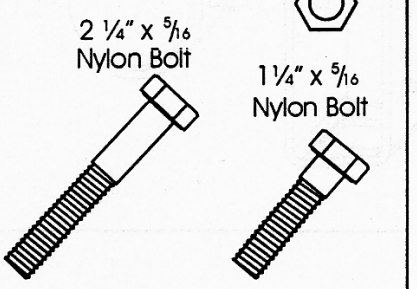
7. If gro-rocks are used, they should be put into a 5-gallon pail and treated with 1/2 litre of Hydrogen Peroxide and water. Let stand for several hours, then rinse clean.

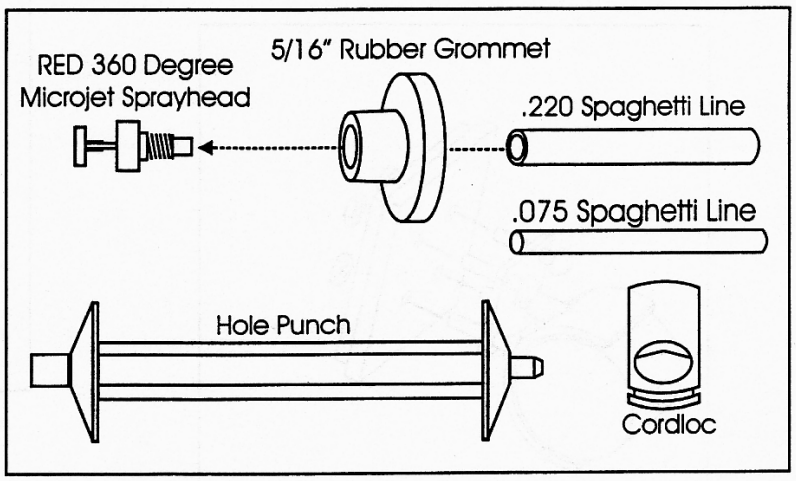
8. To clean flex hose effectively, stretch the hose out so that the inner grooves can be flushed clean of any trapped particles.

9. For cleaning, a 3% solution of Hydrogen Peroxide in a spray bottle works well as a disinfectant.

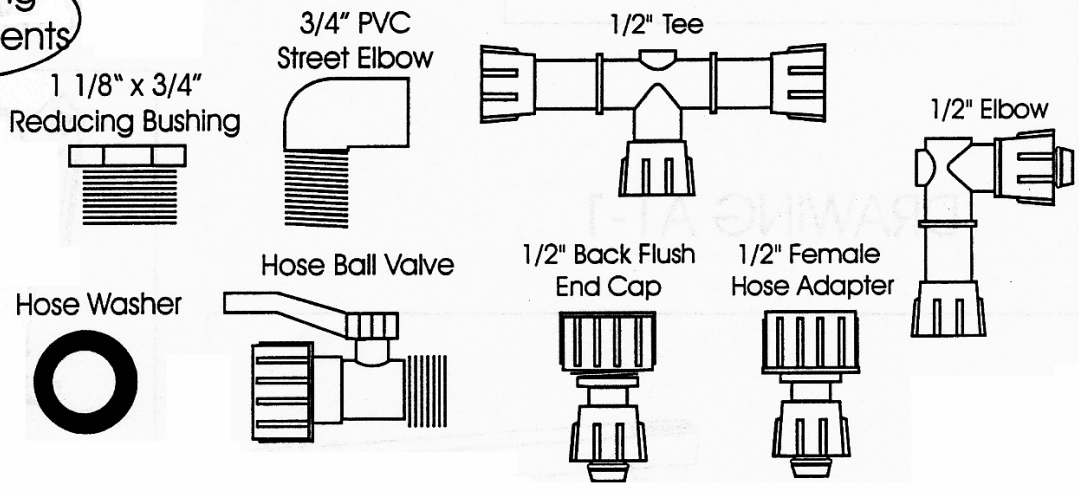
SMALL COMPONENTS (Drawings not to scale)

Nylon Nuts & Bolts

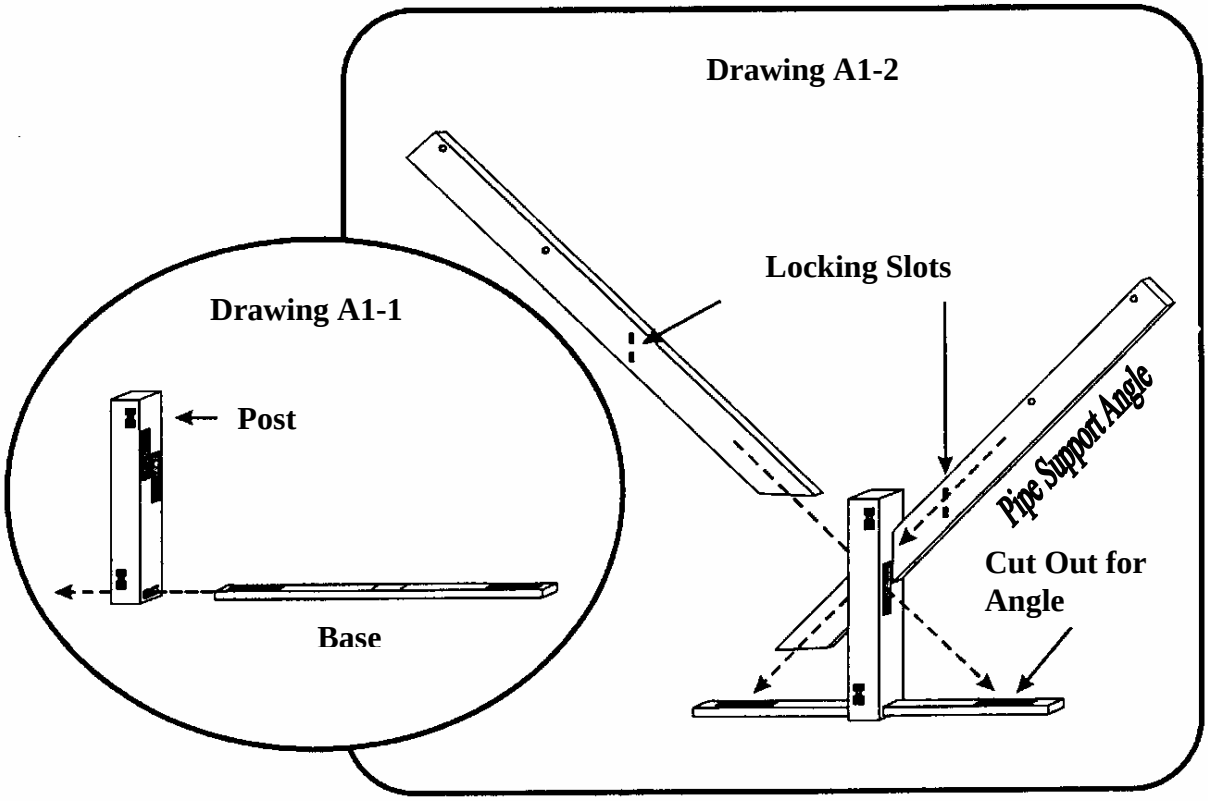


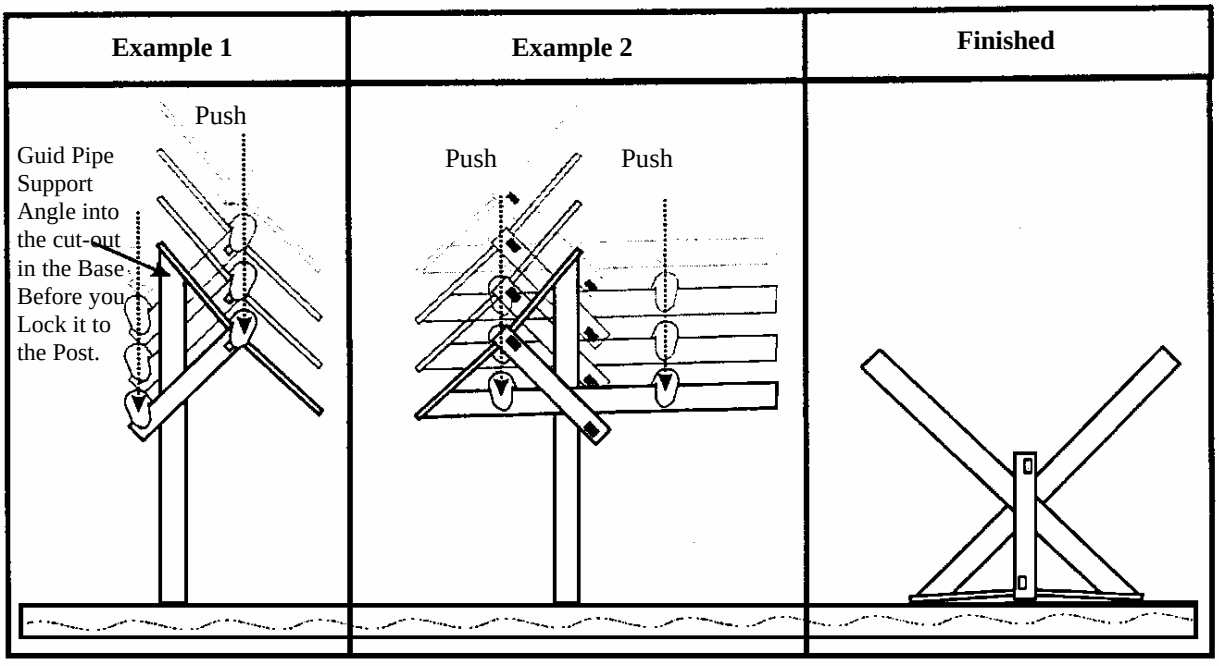


Plumbing Components

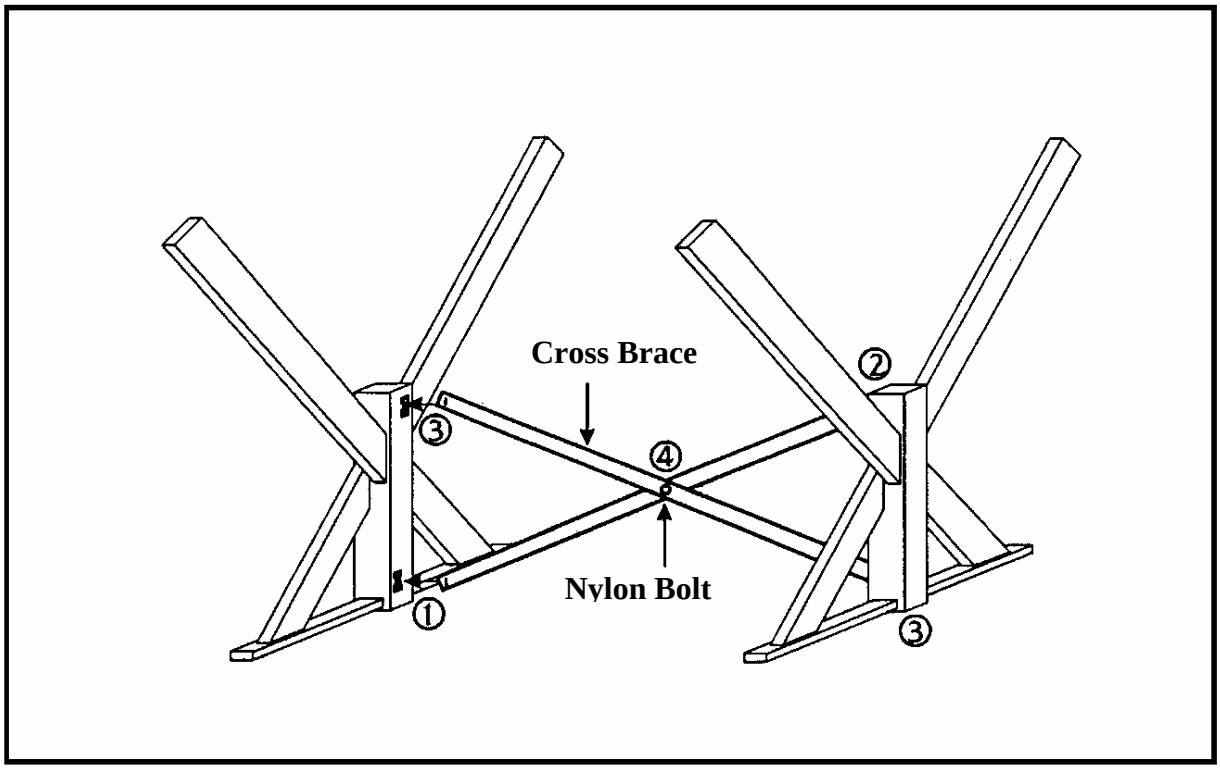


Drawings A1-1, A1-2, and Examples 1 & 2

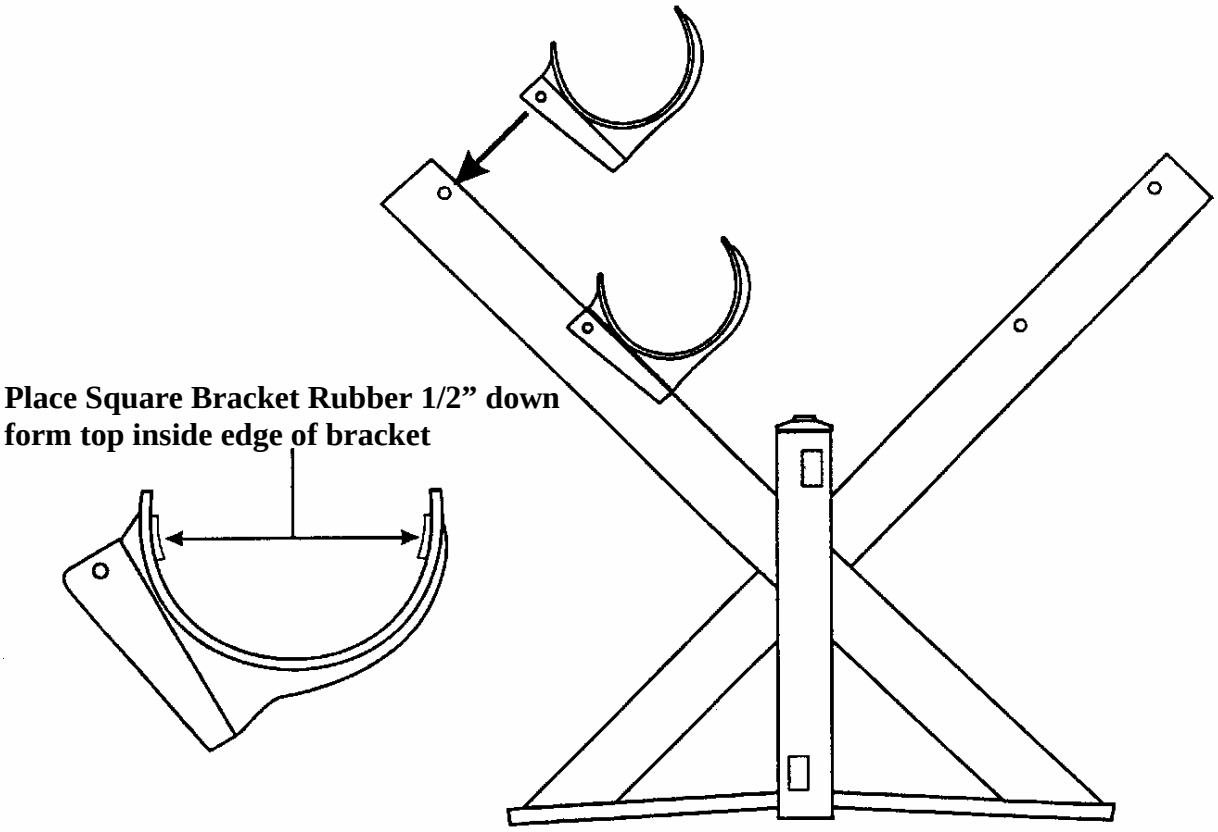




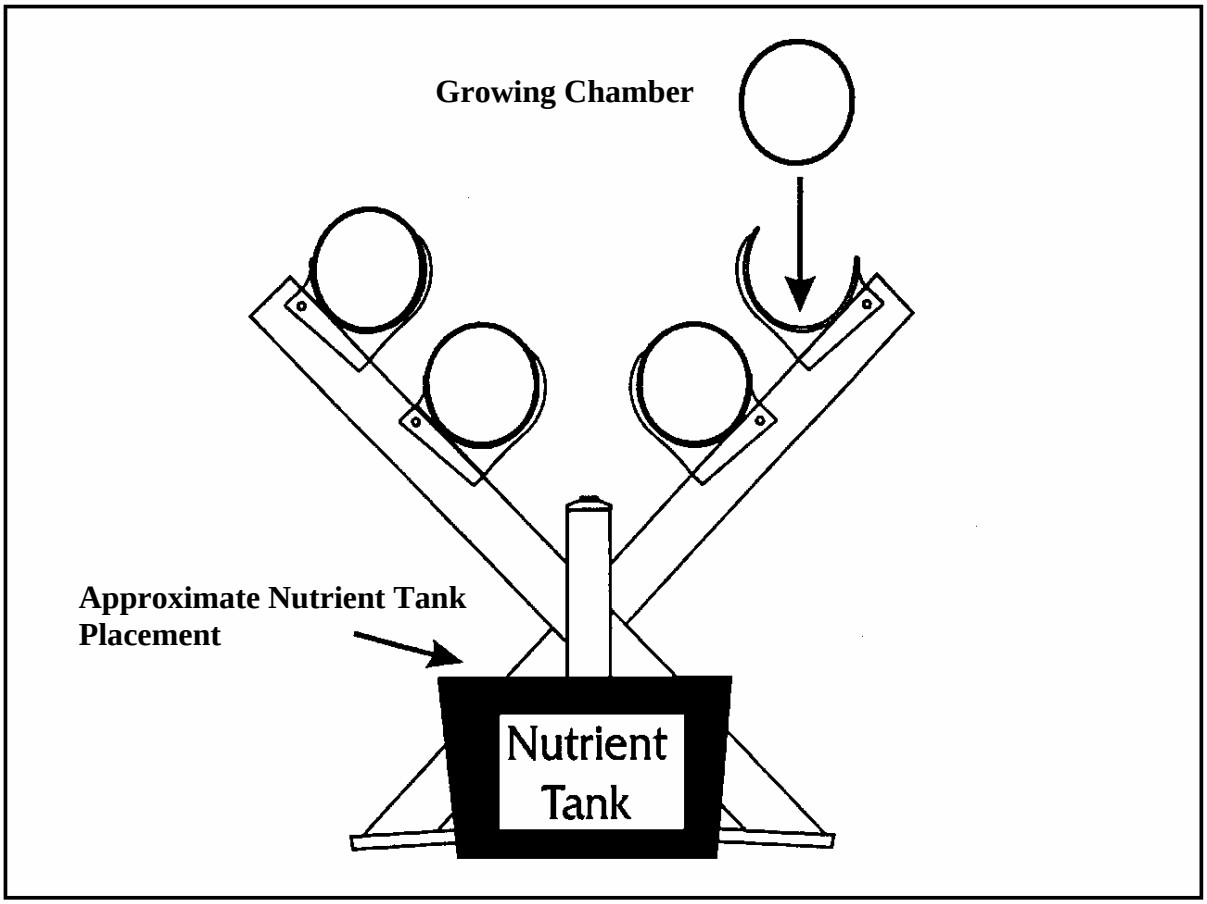
Drawing A2-1



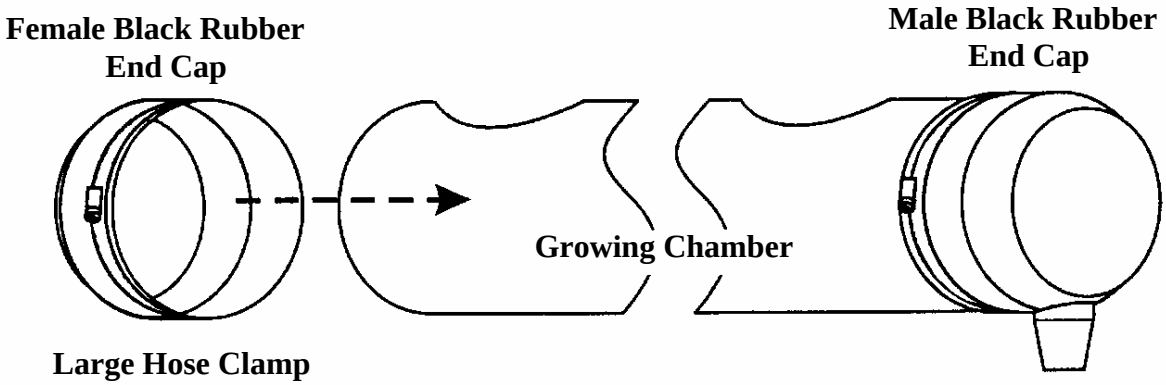
Drawing B1-1



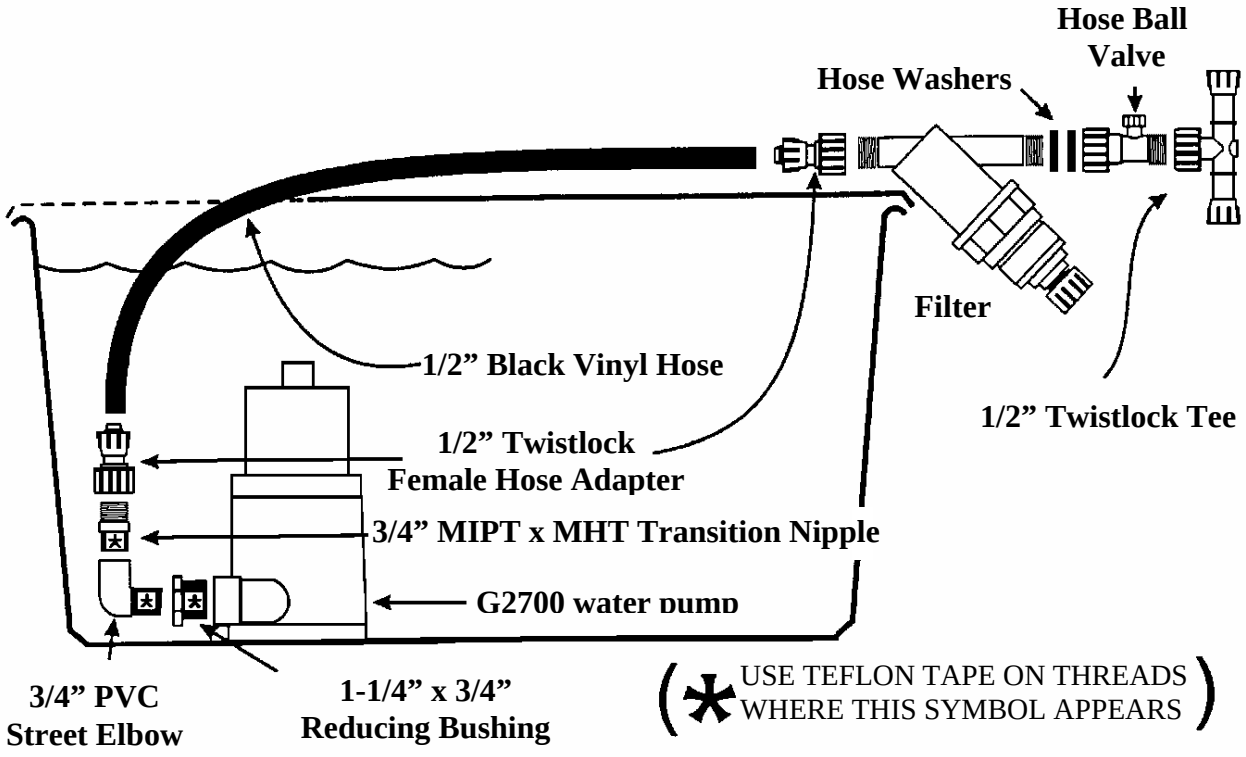
Drawing B2-1

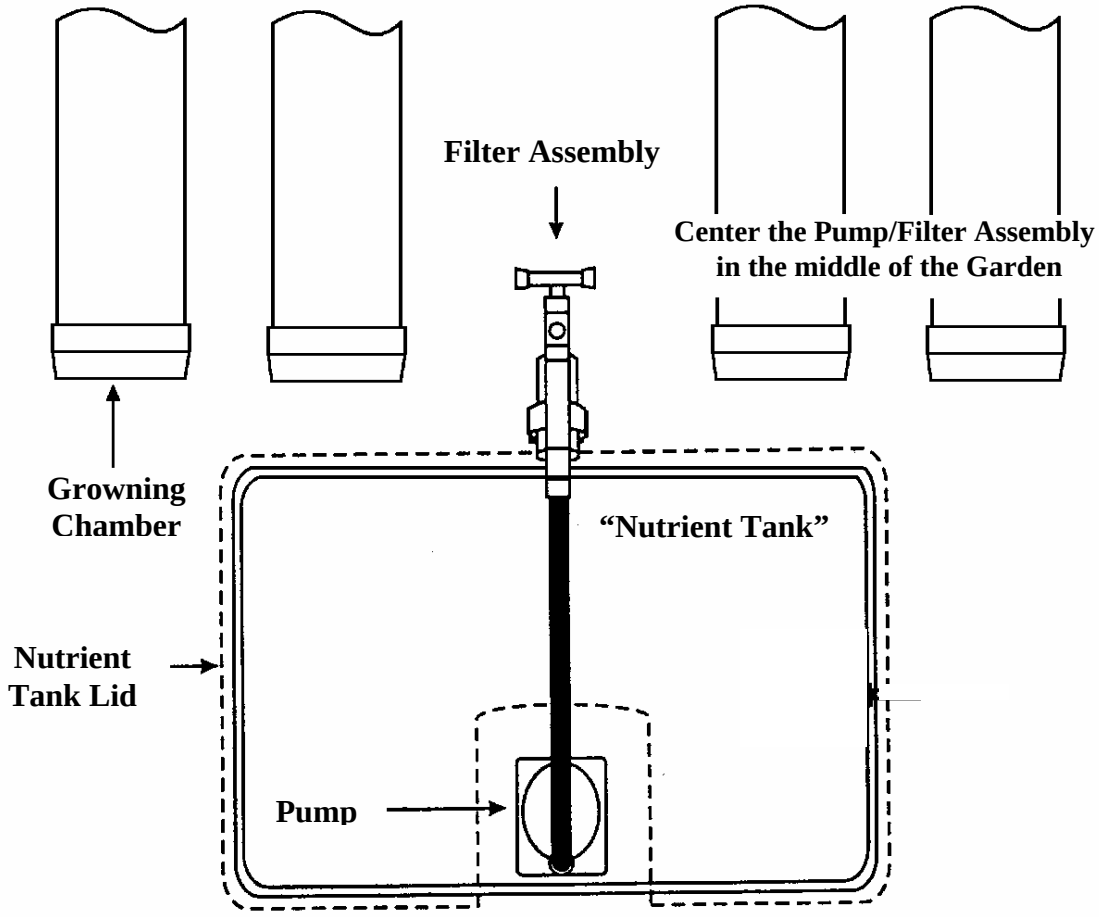


Drawing B2-2

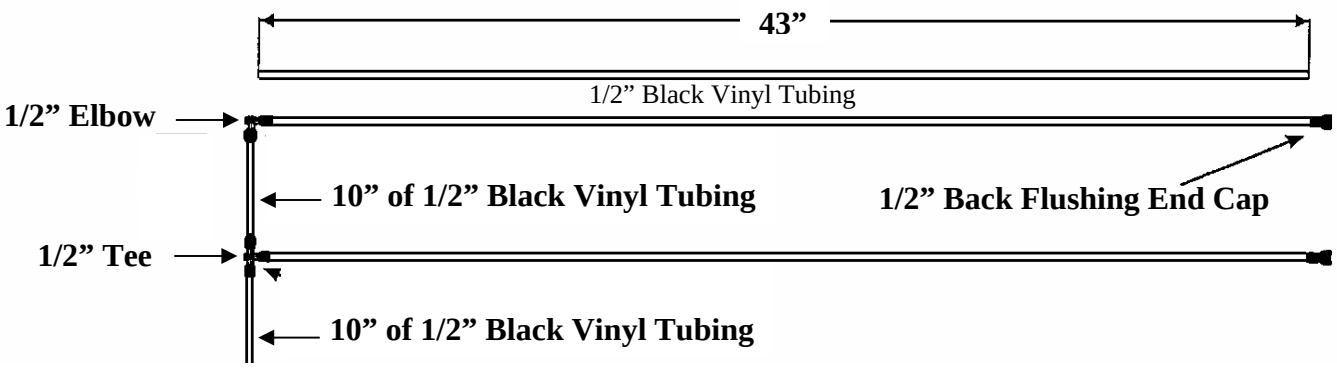


Drawing C1-1

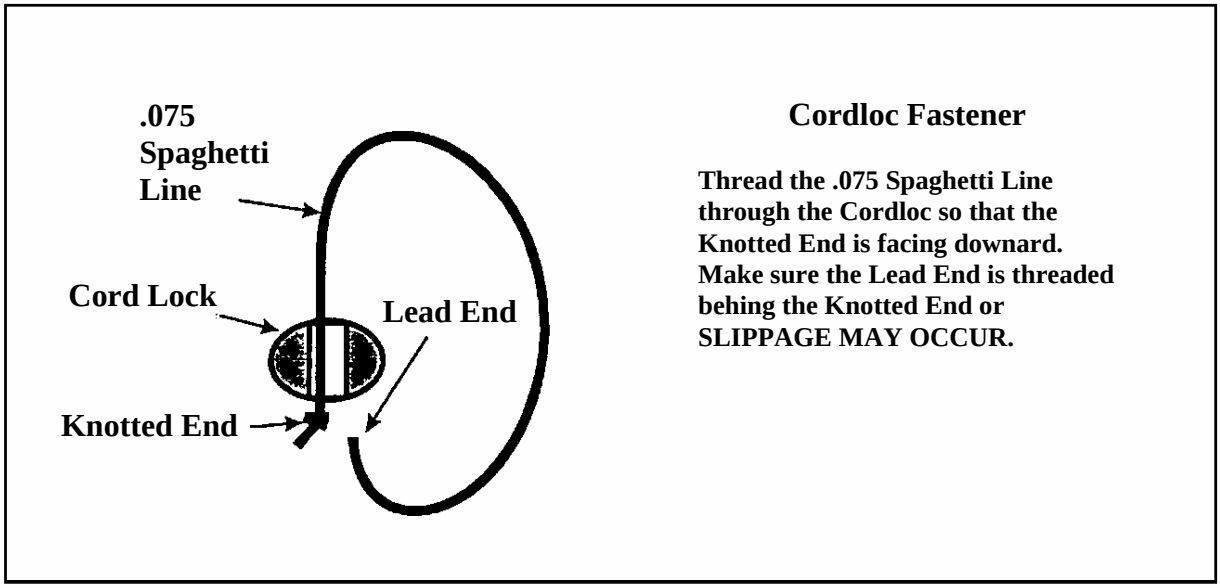

Hose Ball Valve
Hose Washers
Filter
1/2" Black Vinyl Hose
1/2" Twistlock Tee
1/2" Twistlock Female Hose Adapter
3/4" MIPT x MHT Transition Nipple
G2700 water pump
3/4" PVC Street Elbow
1-1/4" x 3/4" Reducing Bushing
(* USE TEFLON TAPE ON THREADS WHERE THIS SYMBOL APPEARS)


Filter Assembly
Center the Pump/Filter Assembly in the middle of the Garden
Growning Chamber
"Nutrient Tank"
Nutrient Tank Lid
Pump

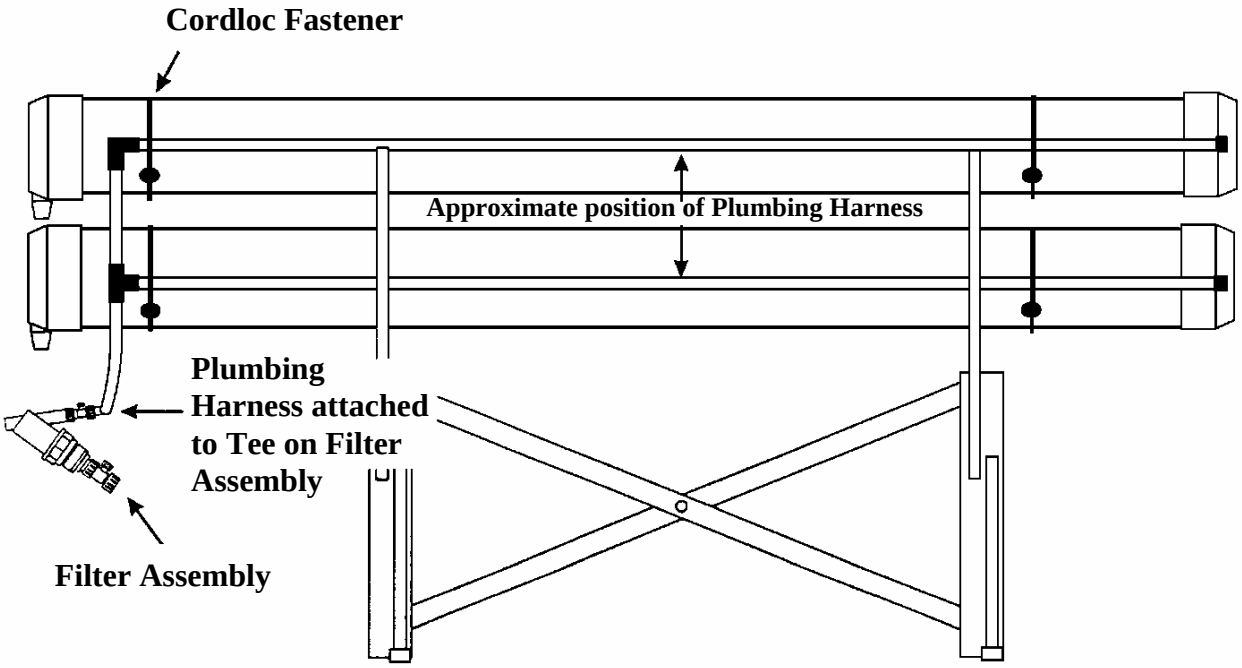
Drawing D1-1



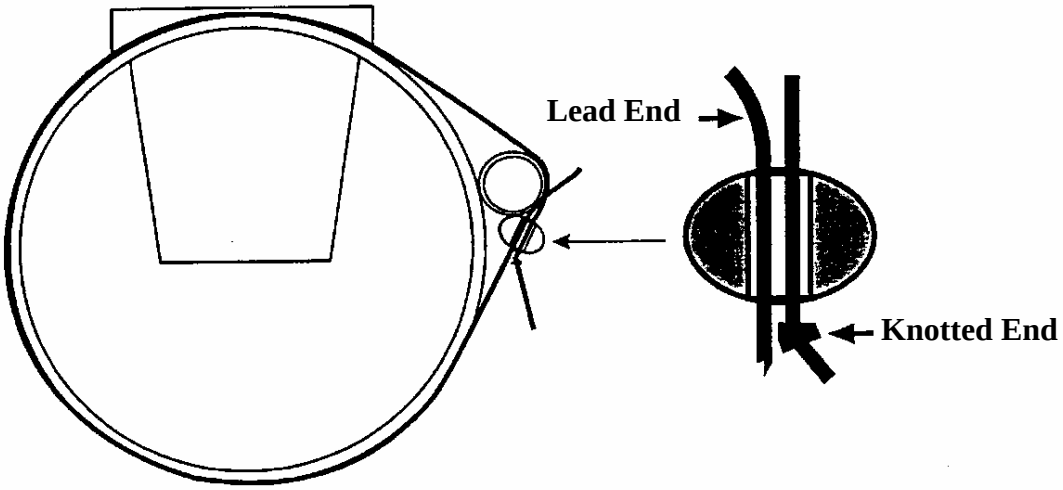
Drawing D2-1



Drawing D3-1

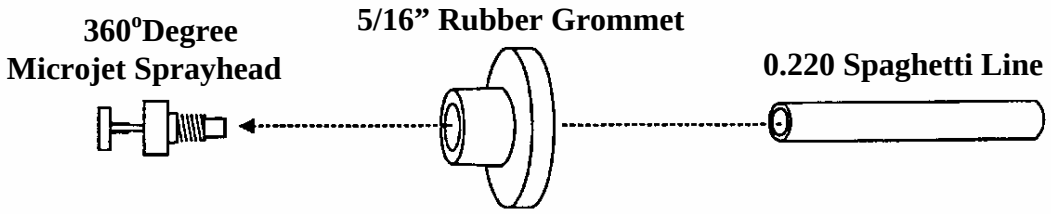


Drawing D3-3

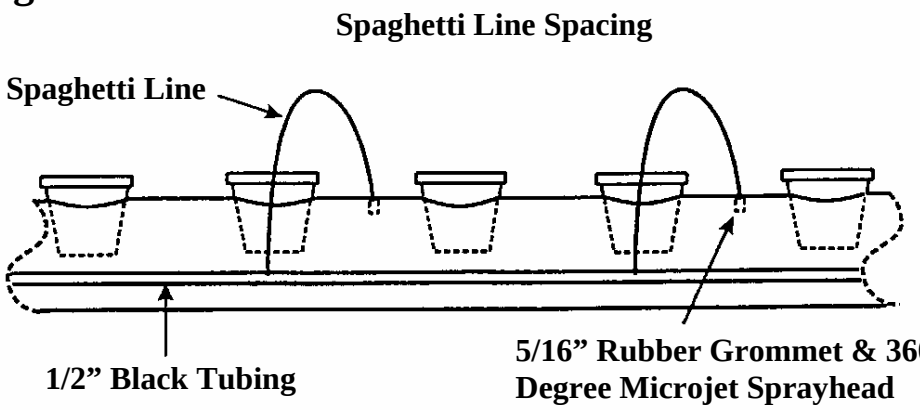


Thread the .075 Spaghetti Line through the Cordloc so that the Knotted End is facing downward. Make sure the Lead End is threaded behind the Knotted End or SLIPPAGE MAY OCCUR

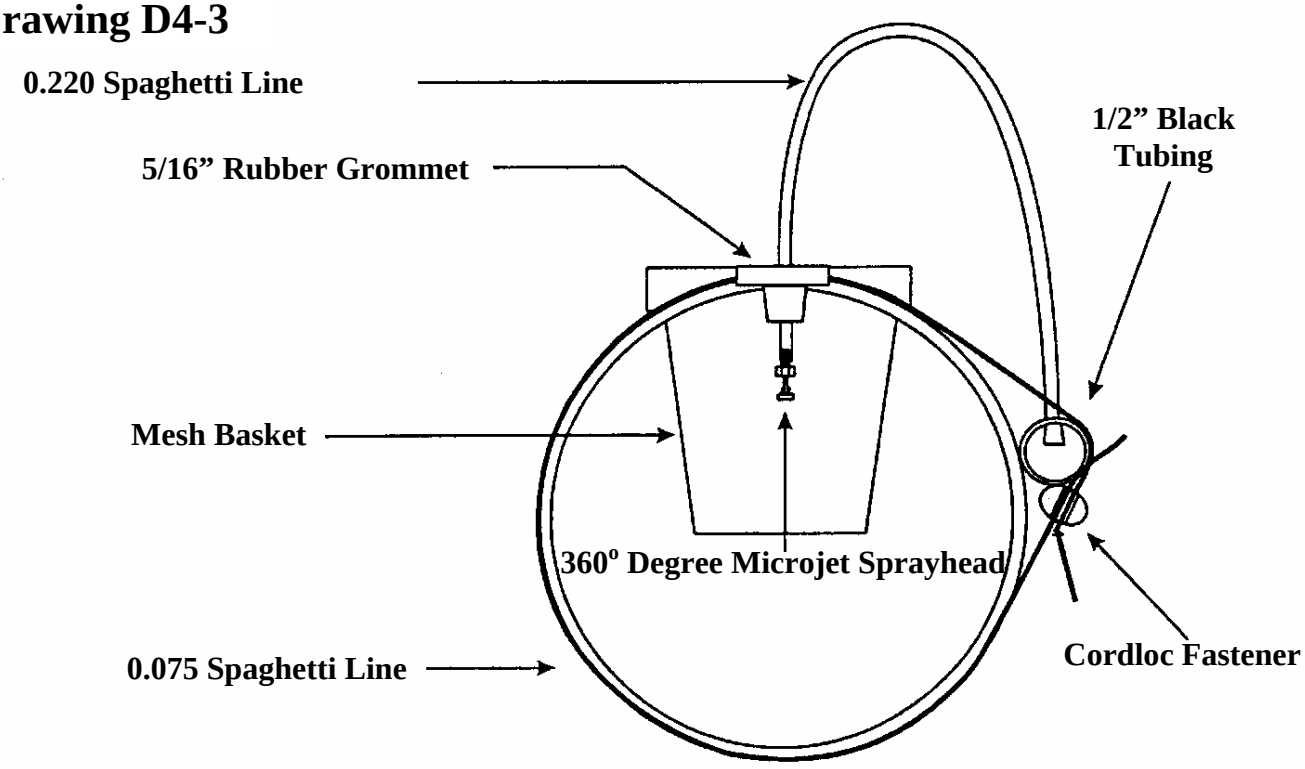
Drawing D4-1



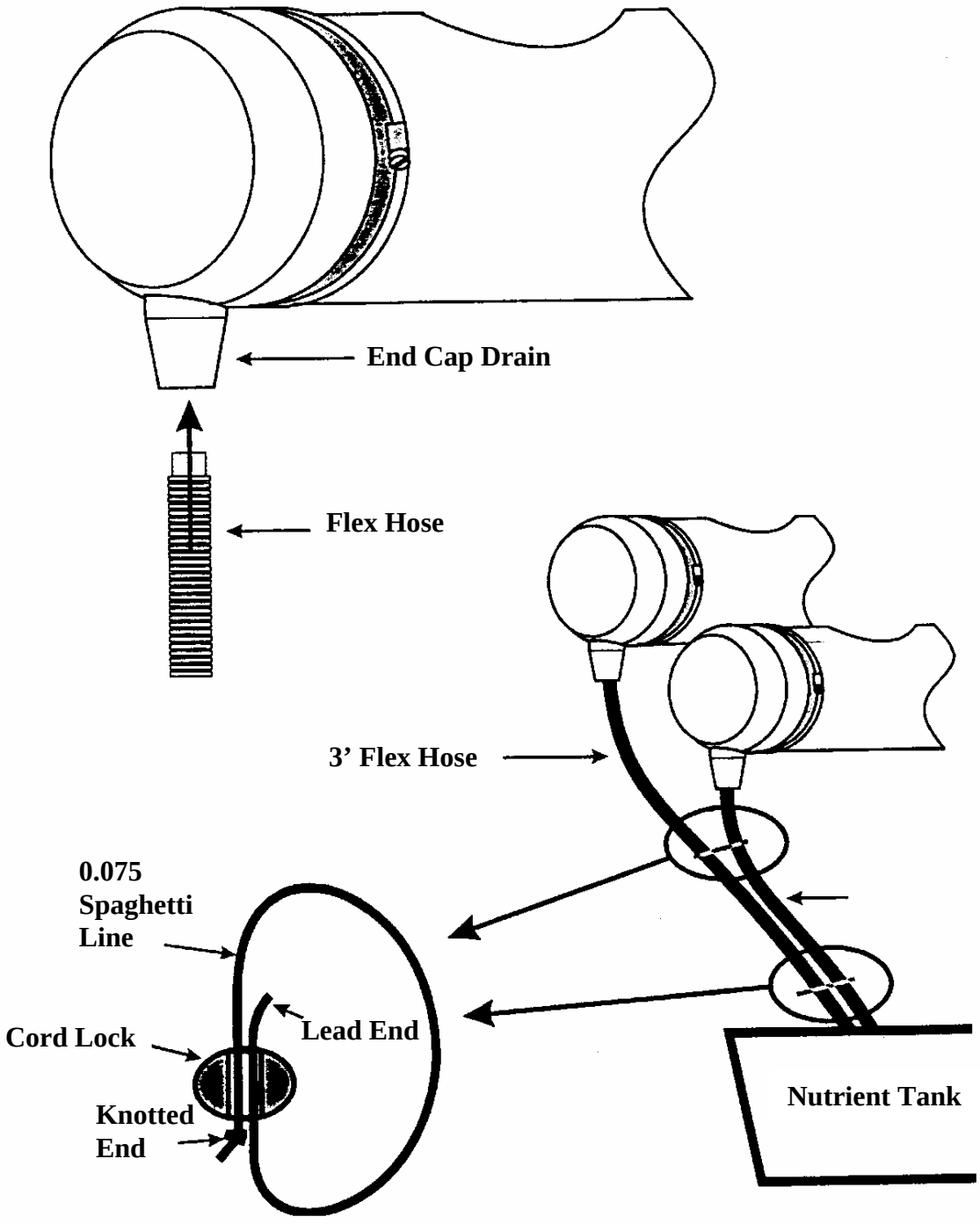
Drawing D4-2



Drawing D4-3



Drawing E-1



Thread the .075 Spaghetti Line through the Cordloc so that the Knotted End is facing downward.