DIVISION OF FarmTek
Growers supply

HYDRO cycle

HydroCycle 4" Pro NFT Lettuce Systems

*112251 Hydroponic Lettuce Table**

Designed to grow healthy plants without soil using mineral-nutrient solutions.

*Actual system may differ from what is shown.

©2023 Growers Supply
All Rights Reserved. Reproduction
is prohibited without permission.

STK#	DIMENSIONS
112251	144" W x 39" H x 144" L*

*Dimensions have been rounded and are approximate.
Frame only. Does not include NFT channels or drain plumbing.

WARNING: Cancer and Reproductive Toxicity - P65Warnings.ca.gov

Revision date: 05.18.23

Important Information

READ THIS DOCUMENT BEFORE YOU BEGIN

Thank you for purchasing this HydoCycle Pro NFT hydroponic lettuce system. When properly assembled and maintained, this product will provide years of reliable service. These instructions include helpful hints and important information needed to safely assemble and properly maintain the system. Please read these instructions ***before*** you begin. If you have any questions during the assembly, contact Customer Service at 1.800.245.9881 for assistance.

SAFETY PRECAUTIONS

- Wear eye protection.
- Wear gloves when handling metal pipes.
- Use a portable GFCI (Ground Fault Circuit Interrupter) when working with power tools and cords.

REQUIRED TOOLS

The following list identifies the main tools needed to assemble the hydroponic system. Additional tools and supports may be needed.

- Tape measure and marker
- Variable speed drill (cordless with extra batteries works best)
- 1/4" hex key (Allen) wrench
- Metal-cutting saw, hammer, and gloves
- Level (4'– optional)
- Drill bit set
- Adjustable pliers

- Utility knife or similar cutting tool to cut hose and tubing
- Magnetic nut setter (5/16" x 2-9/16")
- Small and medium adjustable wrenches
- 1-3/8", 1-3/4", and 2-1/2" hole saw bits

ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your hydroponic table. *This manual describes how to assemble a single table that includes twenty (20) twelve foot (12') channels.* The steps outlining the assembly process are as follows:

1. Verify that all parts are included in the shipment. Notify customer service for questions or concerns.
2. Read these instructions and all additional documentation included with the shipment ***before*** you begin.
3. Gather the tools and assistants.
4. For best results, assemble the components in the order they are presented in these instructions.
5. Read the care and maintenance information.

UNPACK AND IDENTIFY PARTS

The following steps will ensure that you have all the necessary parts *before* you begin assembly.

1. Unpack the contents of the shipment and place where you can easily inventory the parts. Refer to the Bill of Materials/Spec Sheets.
2. Verify that all parts listed on the Bill of Materials/ Spec Sheets are present. If anything is missing or you have questions, consult the Pictorial Parts Guide and all diagrams for clarification, or contact Customer Service.

   NOTE: At this time, you do not need to open the plastic bags containing smaller parts such as fasteners or washers (if equipped).

CARE AND MAINTENANCE

Proper care and maintenance of your hydroponic table is important. Check the following items periodically to properly maintain your hydroponic table.

- Check connections and all fasteners to verify that they remain tight.
- Do not climb or stand on the frame or channels at anytime.
- Verify that the supply lines and related fittings are clean and functioning properly.
- Replace all worn or damaged parts and fittings promptly.
- Repair all leaks immediately.
- If the table is moved, inspect all parts and connections before reassembling and use.
- For replacement or missing parts, call 1.800.245.9881 for assistance.

QUICK START GUIDE

For a quick overview of this product, its components, and connection details consult the Quick Start Guide at the back of these instructions.

ATTENTION: *This manual describes how to assemble a single table that includes twenty (20) twelve foot (12') channels. If you are connecting this system to another, minor adjustments must be made to some of the procedures that follow.* ***Contact your sales associate for additional details.***

PICTORIAL GUIDE

The following graphics and photos will help identify the different parts of the hydroponic system. (Some parts may not be shown.) To prevent mixing of fittings, select only those that are needed for each procedure. ***Keep all fittings in the shipping bags until they are needed.***

109793 (1)

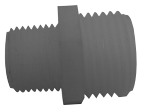
WF2860 (3)

WF2840 (1)

WG3840 (1)

WF3411 (1)

WF2145 (1)


WF2140 (1)

WF3412 (1)

WF1770 (1)

WF2950 (1)

WF2372 (3)

WF1755 (1)

WF1330 (1)

112066 (1)

103468 (1)

WF1520 (3)

103385 (1)

WF1981 (1)
WF1984 (2)

WF3305 (1)

WF1752 (1)

112964 (1)

WF6715 (1)

109772 (1)

WF6682 (20)

WF6600 (1)

FAPA13
U-Clamp (2)

FAPA15
U-Clamp (1)

WR1095 (2)
Tape

116844 (1)

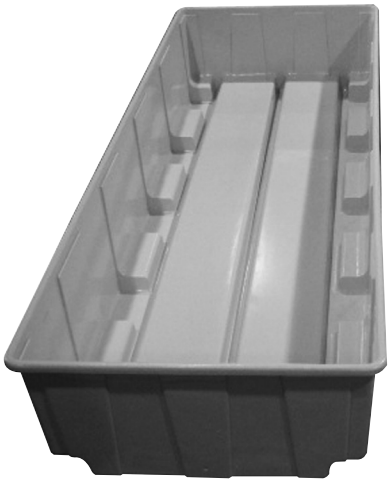
10015106
Short Tee Fitting (24)

WF6990
PVC Cement and
113372 Purple Primer

PVC PRIMER & CEMENT

Follow all directions printed on pvc primer and cement containers. ***Purple color of primer does not fade***! Use caution during application to reduce spills and over application at joints. ***Prime all joints before assembly.***

PICTORIAL GUIDE (continued)



Reservoir

Reservoir Cover

*Actual tank and lid designs may differ from what are shown as examples.

FA4470B
Tek Screw

112539 Hanger (3)

WF6717 Cap
WF2995 Cap

112509 CA4000
Instant Adhesive

112542 Cover

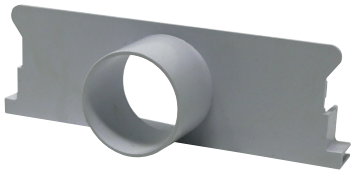
111046 Poly Tube

109260 Air Stone (2)

WF6504A Hose

110725 (1)
Air Pump

Plastic Pipe & Tube Cutter



117079 (20)
End Cap w/ Outlet

117078 (20)
End Cap No Outlet

111907 (1)

110723 (1)
ActiveAqua Pump 800

WF1023 Filter (1)

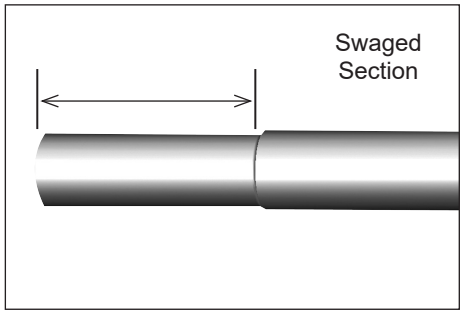
1

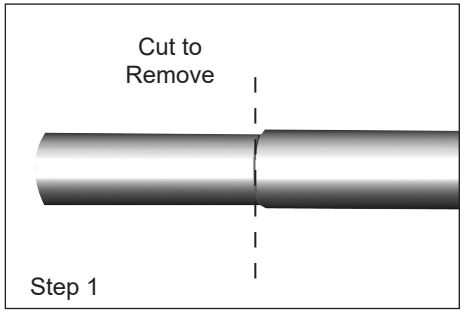
ASSEMBLE MAIN SUPPORT FRAME

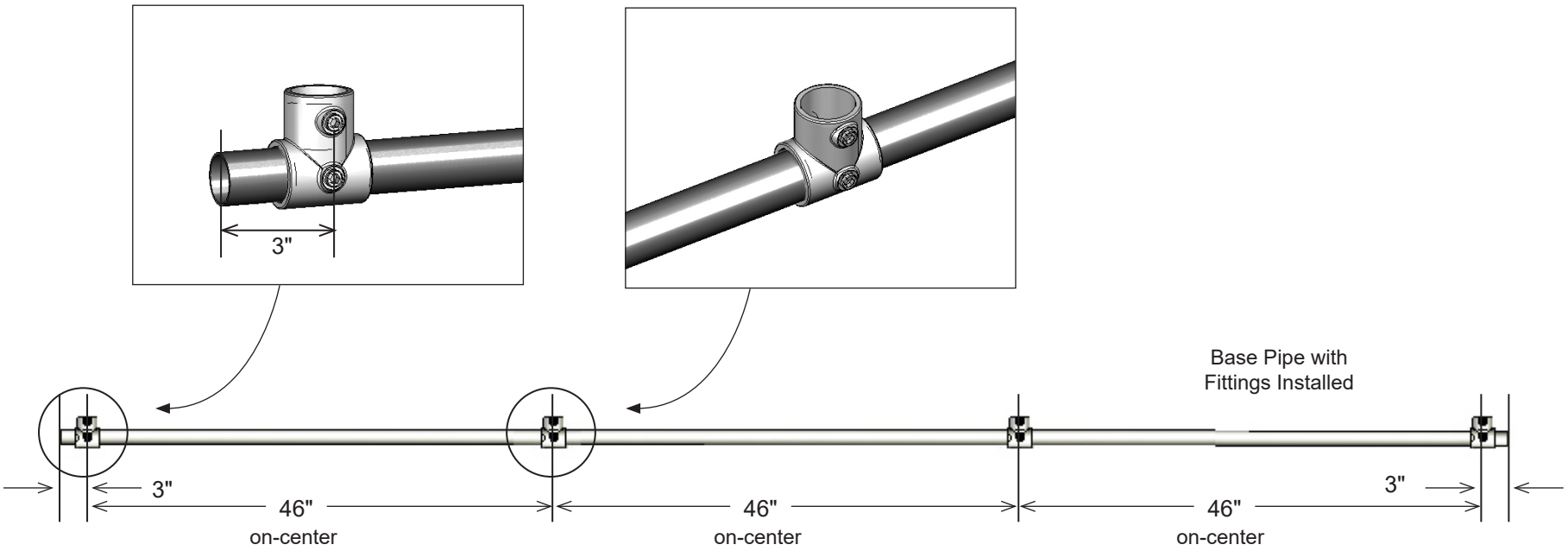
Consult the Quick Start section of this guide for an overview of the system and additional diagrams. Also included in the Quick Start section is a breakdown of all fitting assemblies used in the 112251 hydroponic lettuce system. ***These fittings can be assembled any time prior to the final construction of the hydroponic system.***

Complete these steps to get started:

1. Take all long 131S147 pipes and cut off the swaged (or tapered) end of each pipe. Pipes will be 144" long when finished.
2. File the cut end of each pipe to remove any loose metal or sharp edges.
3. With three (3) of the base pipes on a flat surface, slide four (4) tee fittings onto each 144" pipe and space as shown below. Position with the set screws facing up.
4. Using a 1/4" hex wrench, tighten each fitting and recheck the on-center spacing.







1

ASSEMBLE MAIN SUPPORT FRAME (continued)

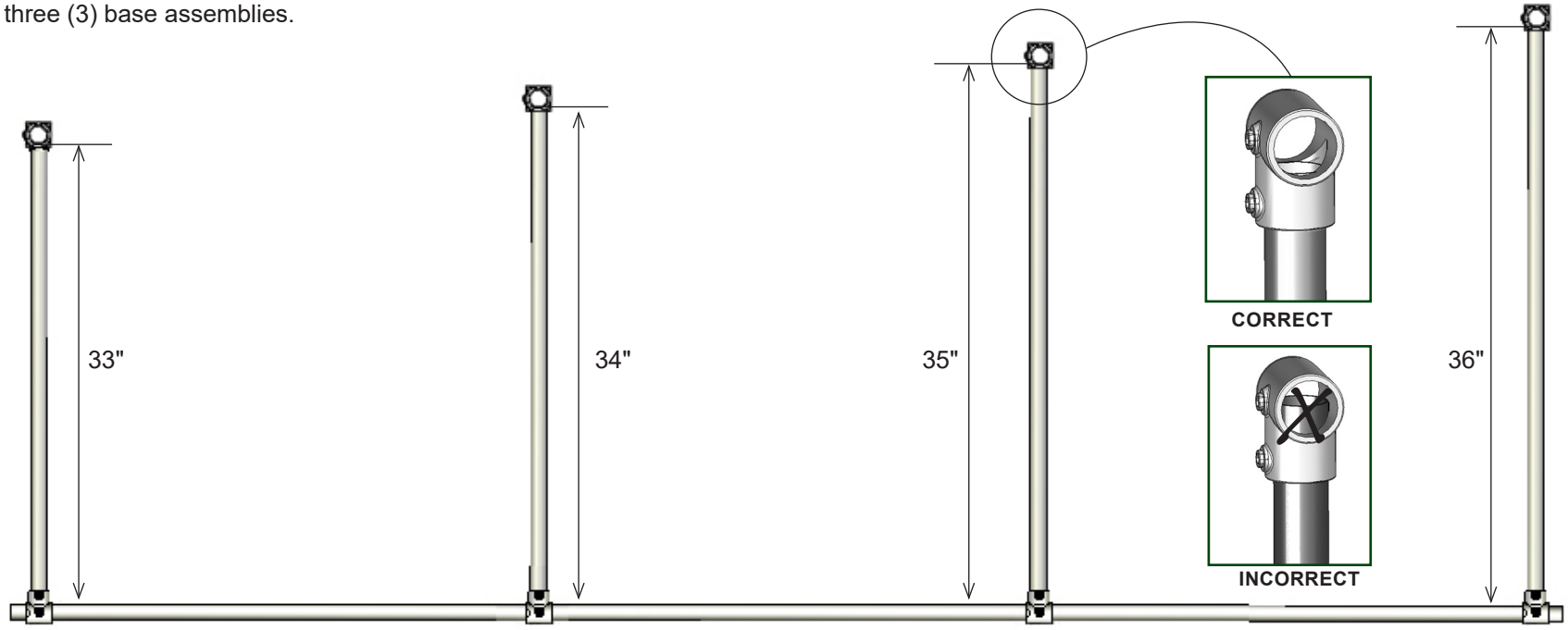
5. With a metal-cutting saw or tool, cut the legs for the support frame. Use **six (6) 131P072 pipes** and cut as follows:

   — One (1) pipe for two (2) legs at 33";
   — One (1) pipe for two (2) legs at 34";
   — One (1) pipe for two (2) legs at 35";
   — One (1) pipe for two (2) legs at 36";
   — One (1) pipe for two (2) legs: one at 33" and one at 34";
   — One (1) pipe for two (2) legs: one at 35" and one at 36".

6. Slide each leg into position as shown and tighten the base pipe tee fitting set screw to secure the legs.

7. Place a tee fitting at the top of each leg. Slide a scrap piece of 1.315" pipe cut from a leg pipe to properly set the fitting position if desired. Assemble on a flat surface to keep the fittings square on the end of the leg pipes. Lock the fittings in place by tightening the set screws and repeat the process for the remaining base pipes.

Create three (3) base assemblies.



Side View of Base Assembly

1

ASSEMBLE MAIN SUPPORT FRAME (continued)

8. With assistance, arrange and stand the three (3) base assemblies so that the leg lengths of each base assembly are aligned (i.e., 36" with 36", 35" with 35", and so on).

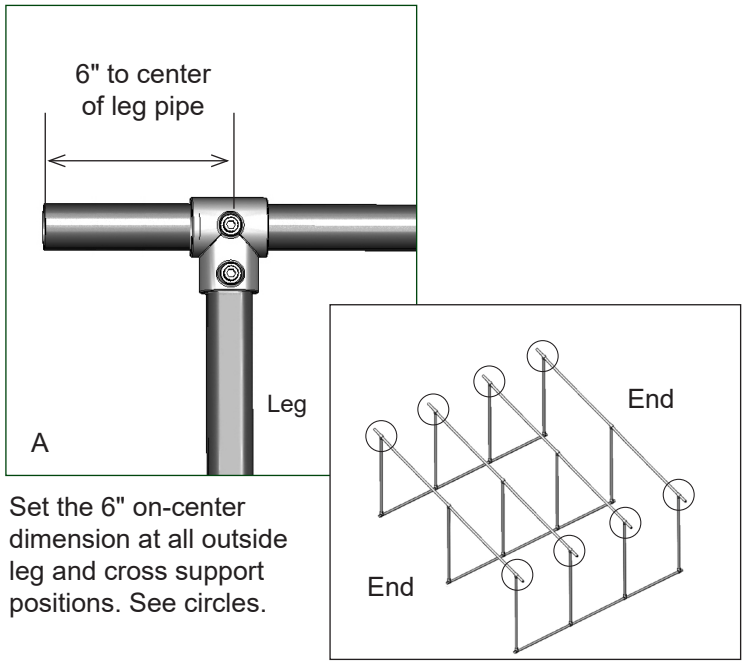
   NOTE: It is best to ***construct the support frame in the area where it will be used*** so the frame can be leveled for final assembly.

9. Next, take one of the remaining 131S147 pipes (prepared in Steps 1 & 2) and slide it through the tee fittings at one end of each base assembly. Repeat the step to install all remaining 144" cross supports.

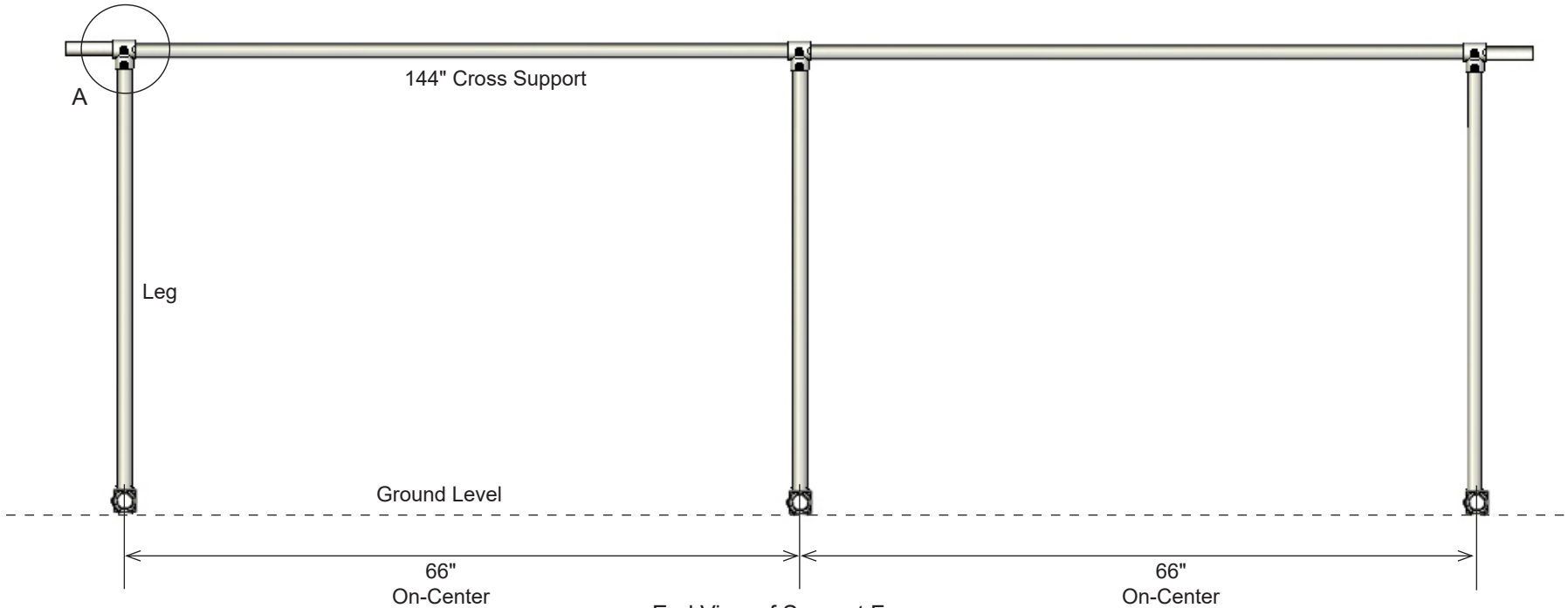
10. Set the width of the support frame at ground level and at the cross support at 66" on-center. See the diagram below and in the Quick Start section near the back of this guide.

11. Tighten all set screws to secure all connections.

12. Continue with the next procedure.



Set the 6" on-center dimension at all outside leg and cross support positions. See circles.

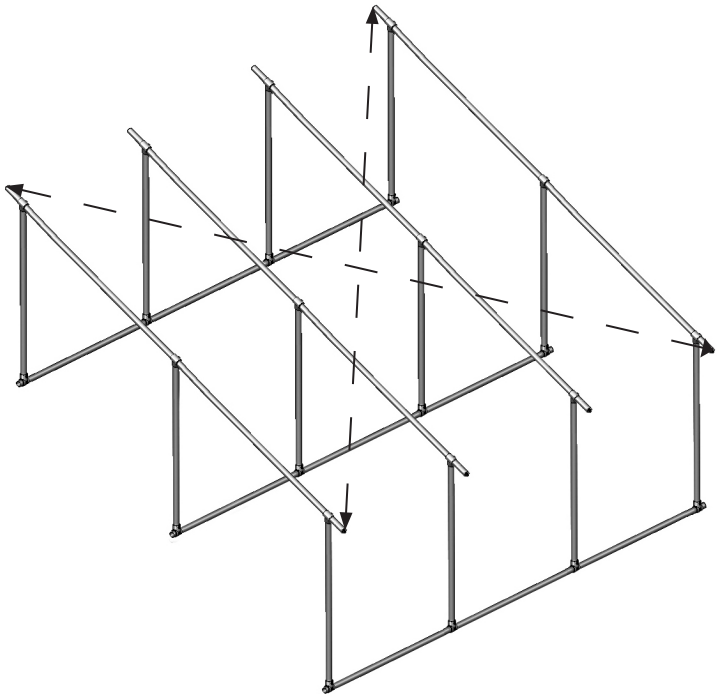


End View of Support Frame

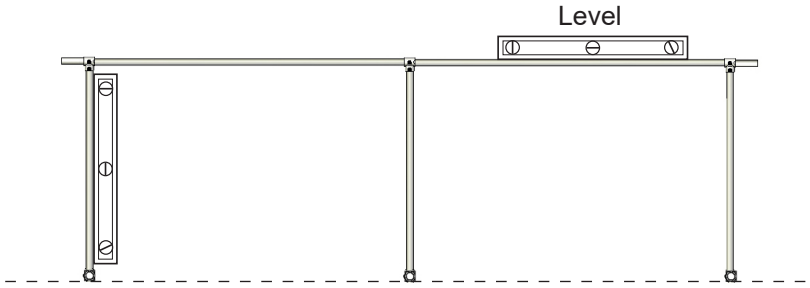
2

LEVEL AND SQUARE THE MAIN FRAME

The support frame must be level and square before it is ready for the growing channels and lettuce production. An uneven frame can affect the delivery and distribution of the nutrient solution. Improper flow may cause irregular crop growth. The following procedure helps to ensure that channels will sit squarely on the frame. Complete these steps to level and square the main frame:

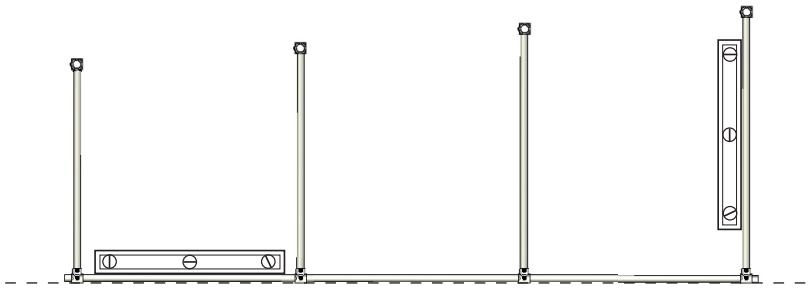


1. To square the frame, measure from corner-to-corner and adjust the frame as needed until the two dimensions are equal. Be sure to measure from the same point at each corner to achieve the best and most accurate results.



End View

2. Once the frame is square, verify that all vertical supports are plumb. Verify that all horizontal pipes are level. After making these adjustments, repeat Step 1.



Side View

3. Check the bottom pipes to ensure these are level. After completing this step, recheck the frame—Steps 1-2.
4. Once the frame is level and square, continue with the next procedure.

3

ASSEMBLE ALL 12' HYDROPONIC CHANNELS: 117077L144

1. Using the support frame as a bench, place one 12' channel (117077L144) on the cross supports.
2. Using the 112509 adhesive, attach the plain end cap (no outlet–116214) to the end of the channel that is resting on the high side of the support table. This is the end with the 36" legs. Be sure to coat the end of the channel with adhesive *before* you install the end cap. Repeat for all 12' channels.
3. Move to the other end of the channel and install the 117079 end cap (with outlet). Coat the end of the channel with adhesive *before* you install the end cap. Repeat for all channels.
4. Next, attach a 90° elbow (WF6682) to each 117079 end cap as shown. Apply pvc primer and cement to end cap outlet and inside surface of fitting and slide fitting onto outlet. Install fitting as shown with open end pointing down in the 6:00 o'clock position.

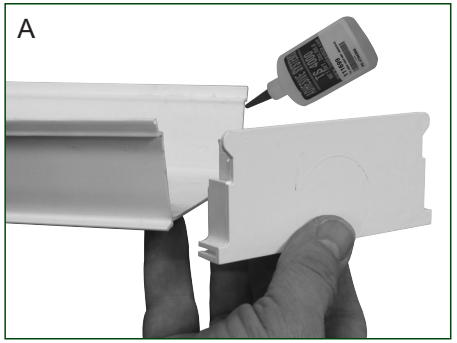
   ATTENTION: Verify that you are using the WF6682 elbows. These are without threads. ***Do not use the WF6692 elbow.***

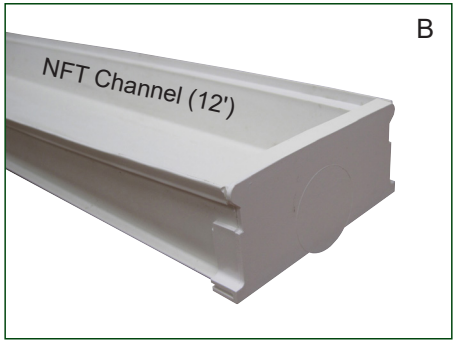
   Apply primer and cement in a well-ventilated area. Read container labels for additional information and precautions.

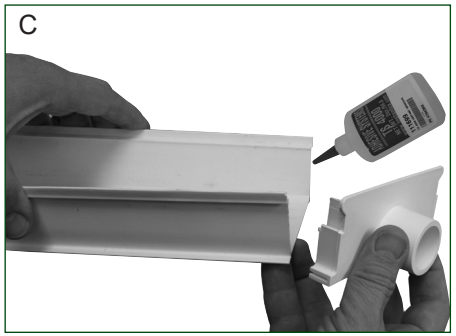
5. Once all end caps and drain elbows are in place, carefully flip all channels over so the bottom is facing up and the open top is down.
6. Apply the 112509 adhesive along the edges to secure end caps to each 12' channel. Photos show an end cap with an outlet. Secure the plain end caps in the same manner.

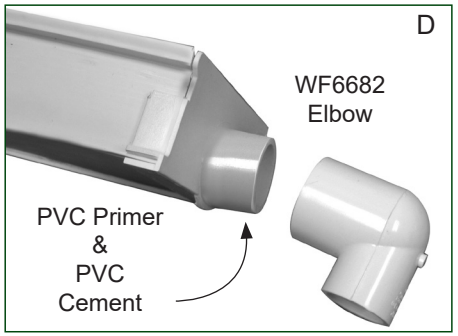
   NOTE: Be sure to coat all edges and seams of the end caps to prevent leaks.

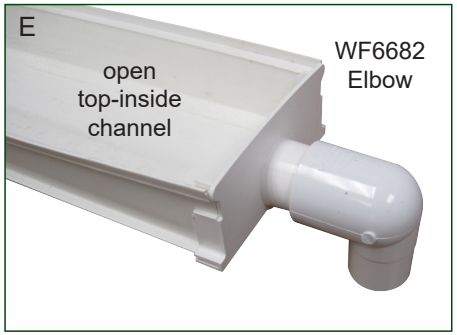
7. Allow the adhesive to dry before moving the channels or testing the system.

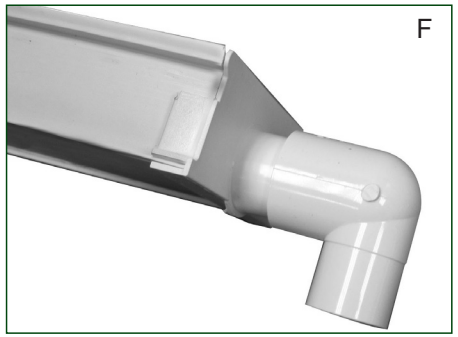


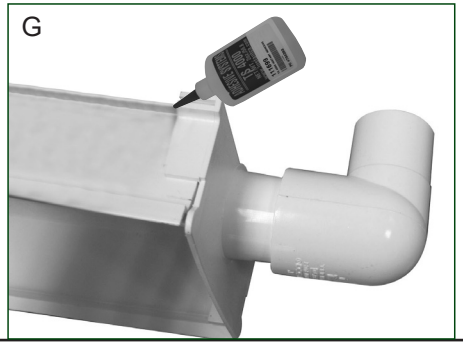












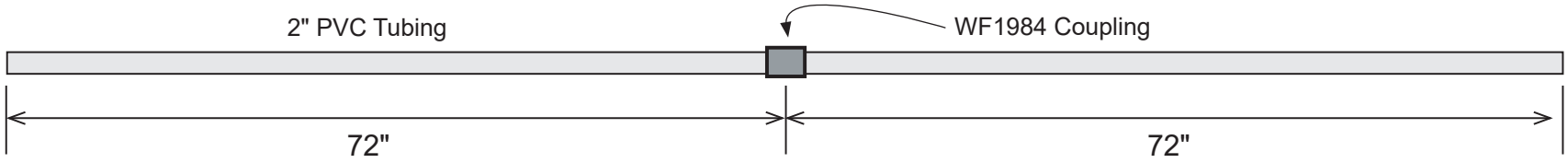
4

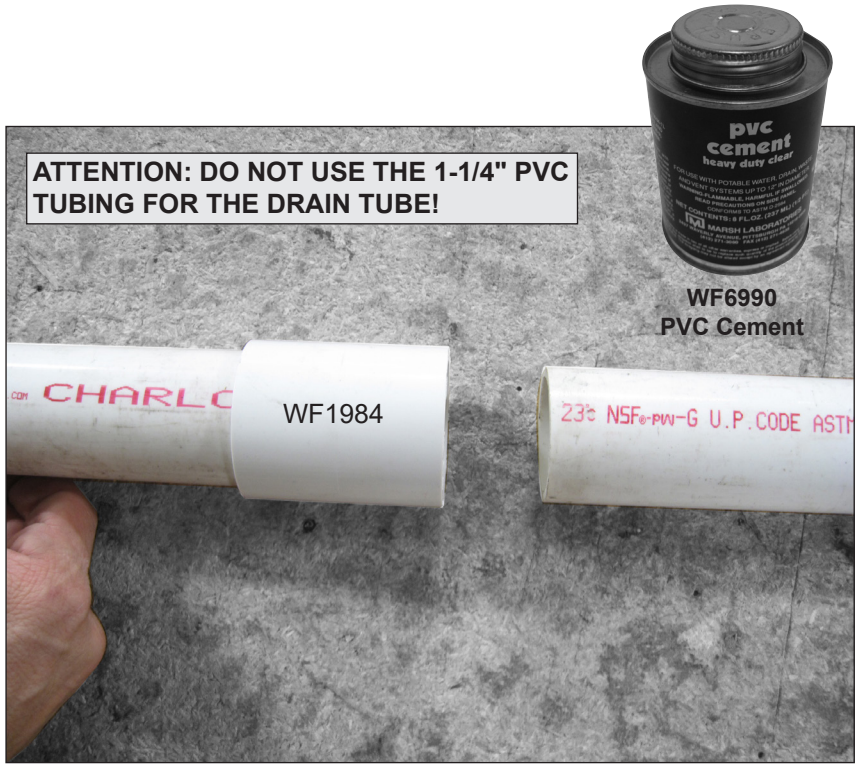
ASSEMBLE THE 2" PVC DRAIN TUBE

ATTENTION: DO NOT USE THE 1-1/4" PVC TUBING FOR THE DRAIN TUBE!

Using the two (2) pieces of 2" pvc tubing (111560) and one WF1984 coupling, construct a single tube that is 144" long. First, cut a 72" section from each 10' pipe and connect these using pvc primer, cement, and WF1984 coupling. There will be two (2) four foot pvc pipe sections remaining.

Apply primer and cement in a well-ventilated area. Read the container information for additional precautions.





Use pvc primer and cement to attach the WF1984 coupling to one end of one 2" tube.

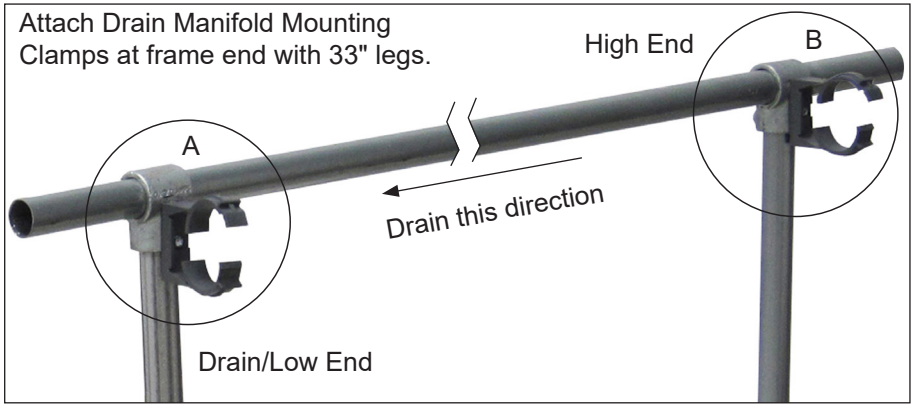
Align the print of the separate tubes—see dashed line in photo—and cement remaining tube to the coupling. Set the assembly aside to dry.

5

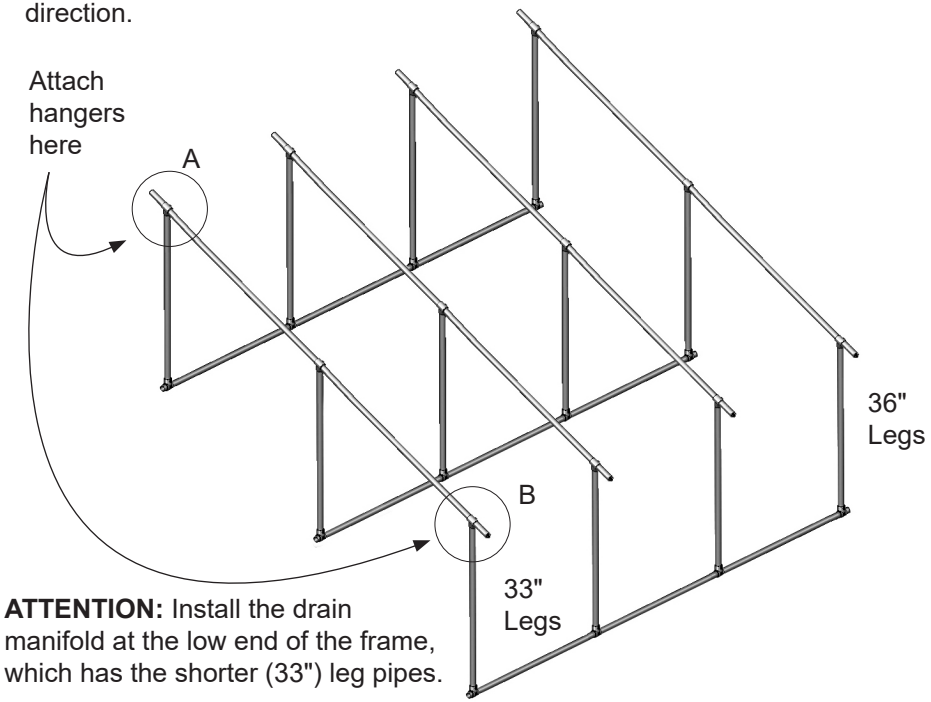
ATTACH DRAIN MANIFOLD HANGERS TO FRAME

Before assembly, dry fit all pvc connections before applying the adhesive. Apply adhesive as instructed only.

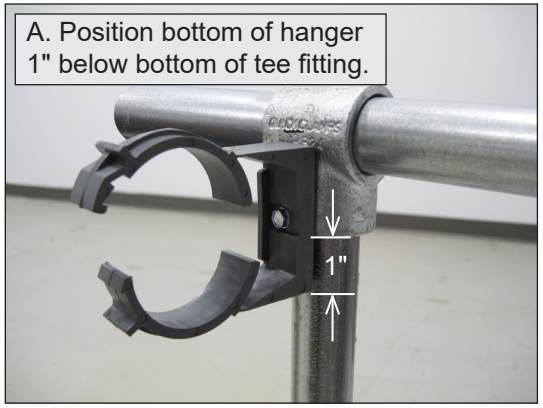
Use the photos to the right to attach the drain manifold mounting hangers to the frame using the FA4470 Tek screws and the magnetic nut setter.

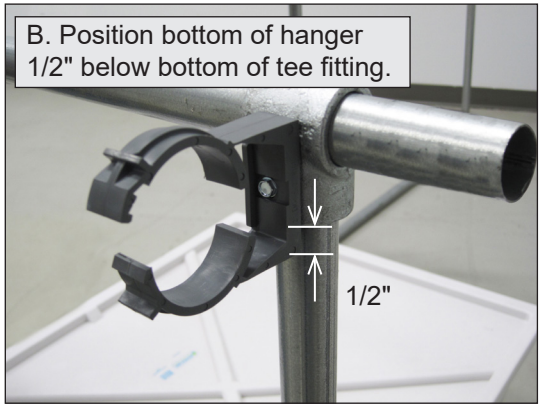


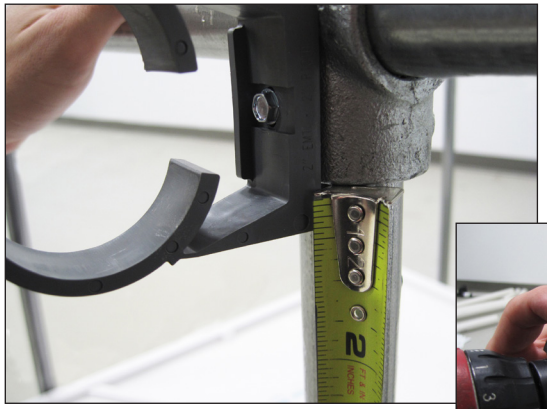
NOTE: Reverse clamp position if you want table to drain in the opposite direction.



ATTENTION: Install the drain manifold at the low end of the frame, which has the shorter (33") leg pipes.







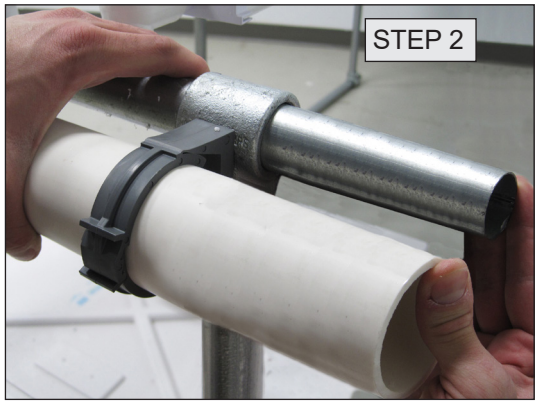
FA4470
Tek Screw

112539 Hanger

5 ATTACH DRAIN MANIFOLD HANGERS TO FRAME—continued

Complete these steps:

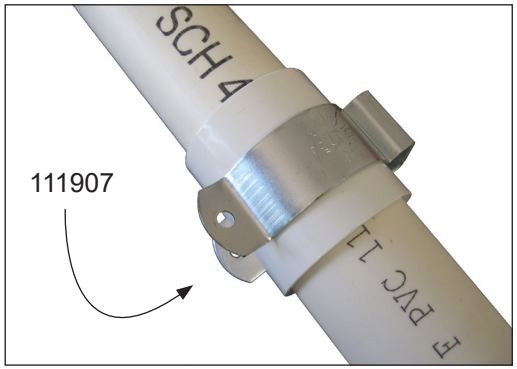
1. Position all channels on the frame (if this has not been done yet) with the drain elbow at the low or drain manifold end of the frame. This is the end with the 33" legs. Slide channels back and away from the frame cross tube as shown. See diagram—below right.

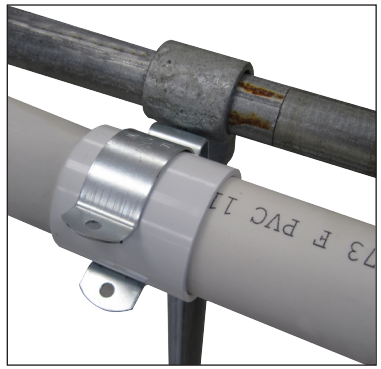


Press against hanger to lock assembly in place.

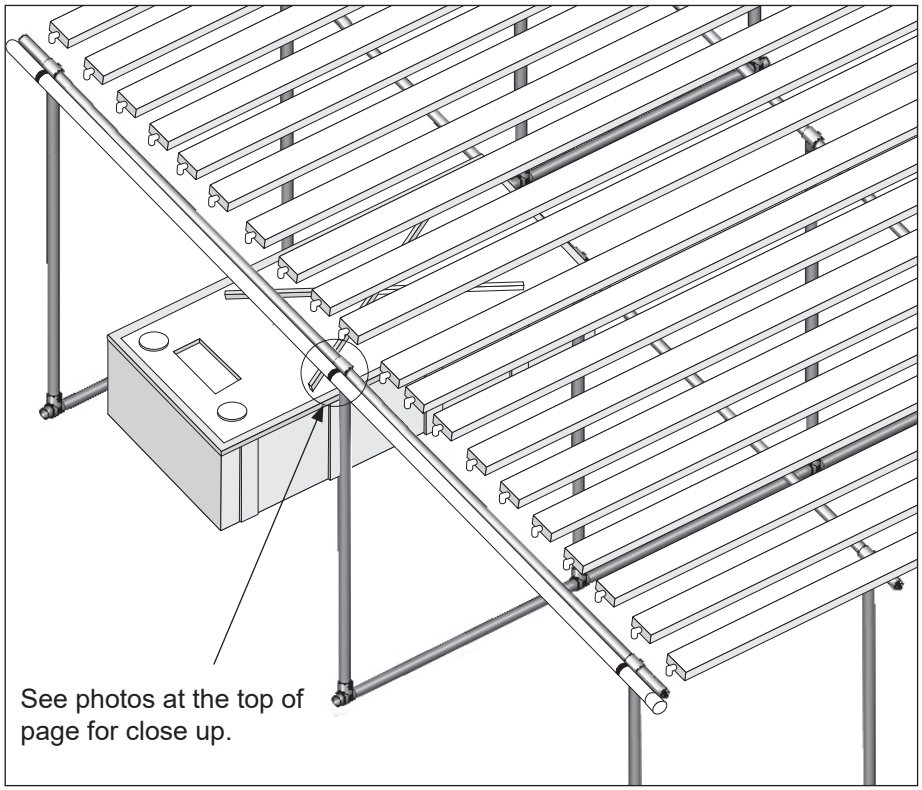
2. Slide the assembled 2" pvc drain manifold into the hangers at each end and press evenly to lock tube in place.
3. Move to the center frame leg and place a 111907 conduit hanger over the pvc coupling.
4. Adjust the position of the hanger so the drain manifold slope is even from end to end. Do not allow the manifold to sag or crown at this middle position.
5. Mark the hanger position on the frame and carefully remove the drain manifold from the end clamps.
6. Using the mark as your guide, reposition the clamp on the frame and attach using an FA4470B Tek screw. See photos above.

NOTE: The 111907 hanger will not need a fastener to hold the pvc in place. None is supplied for this application.





Actual position of hanger on frame may differ from what is shown above.



See photos at the top of page for close up.

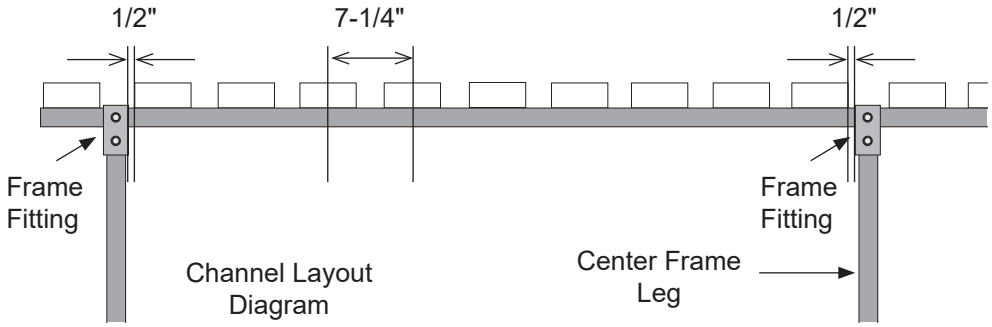
6

PREPARE DRAIN MANIFOLD

WF6717

WF6990
PVC Cement &
113372 PVC Primer

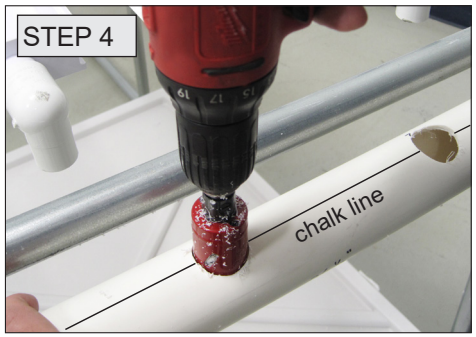
1. With assistance, reattach the drain manifold.
2. Take a chalk line with non-permanent chalk and snap a center line along the top of the tube from end to end.
3. Evenly mark the channel positions on the drain manifold tube. Position the outer channels at each end on the pipe that extends outside the fitting. Allow a 1/4" to 1/2" space between the frame fittings and the channels positioned next to those fittings.

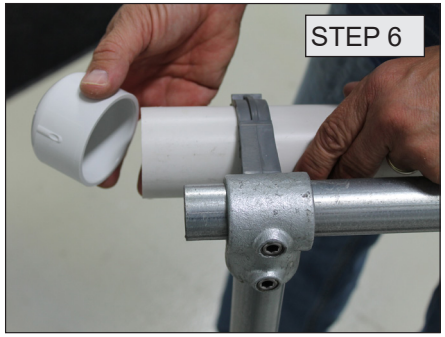


Channel Layout Diagram

NOTE: Evenly space the channels between the frame fittings. Approximate on-center spacing of channels between the fittings is 7-1/4", depending on frame fitting position and the distance channels are set from these fittings.

4. Using a 1-3/8" hole saw, drill a hole at each mark.
5. Clean the drain manifold tube. Remove if necessary
6. Add one WF6717 cap to the high end of the manifold. *Do not cement this to the manifold.* It is removed during routine cleaning and maintenance.
7. Slide the channels into position, insert drain elbows into drain manifold, and continue with the next procedure.



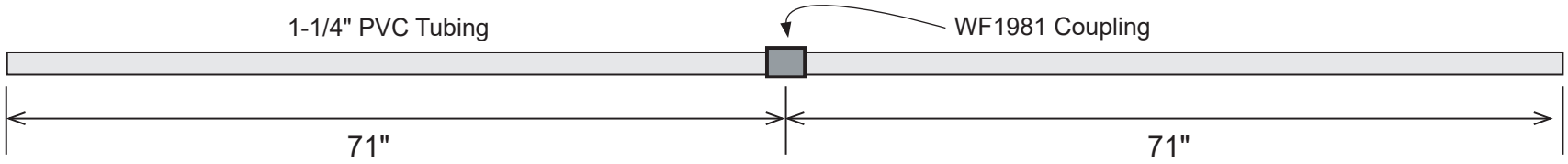


7

PREPARE THE 1-1/4" PVC NUTRIENT SUPPLY MANIFOLD FOR INSTALLATION

ATTENTION: DO NOT USE THE 1-1/4" PVC TUBING FOR THE DRAIN TUBE!

1. Using the two (2) pieces of 1-1/4" pvc tubing (110827) and one WF1981 coupling, construct a single tube that is 142" long. First, cut a 71" section from each 10' pipe and connect these using pvc primer, pvc cement, and the WF1981 coupling. Align the printing of each section during this step. Printing will be used to position and drill holes for the supply fittings.



NOTE: There will be two (2) pvc pipe sections leftover that are approximately 48" long. If you do not care to center the WF1981 coupling on the supply manifold, simply use one full 110827 piece (120") and cut the remainder of what is needed from the other 120" piece. If you are connecting this manifold to another supply manifold, you may want to cut this pipe to a different length. Steps in this guide are specific to a single 112251 kit. Contact your sales associate for additional details if you plan to connect this manifold to another supply manifold.

2. Remove loose material and shavings from the cut and wipe the ends of the tube with a clean, dry cloth. Tube must be free of loose material.

Cut pvc tube to length and gather the parts and materials.

Apply pvc primer and cement to one end of tube and inside fitting.

Slide elbow onto the pvc tube and wipe excess cement from elbow. Allow to dry.

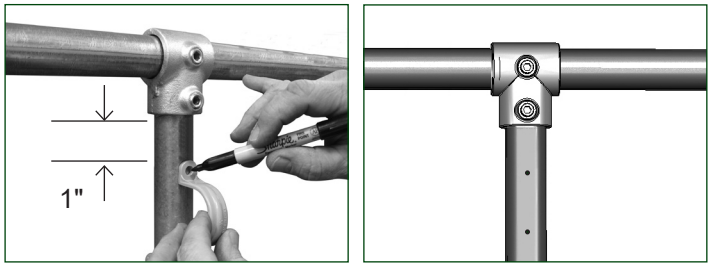
3. Position the printing on the tube so it will be visible when the tube is attached to the frame. In the example above, the inlet end will be at the right side of the assembled tube. Opposite end will be capped in a later procedure. Apply pvc primer and cement to the tube and fitting, and slide the WF6600 (90° elbow) onto the tube. Set the assembly aside to dry.

4. Continue with the next procedure.

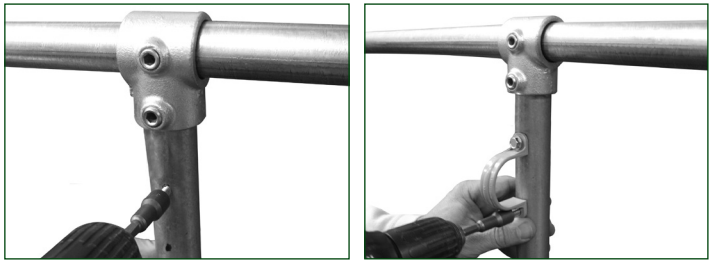
8

INSTALL THE NUTRIENT SUPPLY MANIFOLD AND ADD TUBE FITTINGS

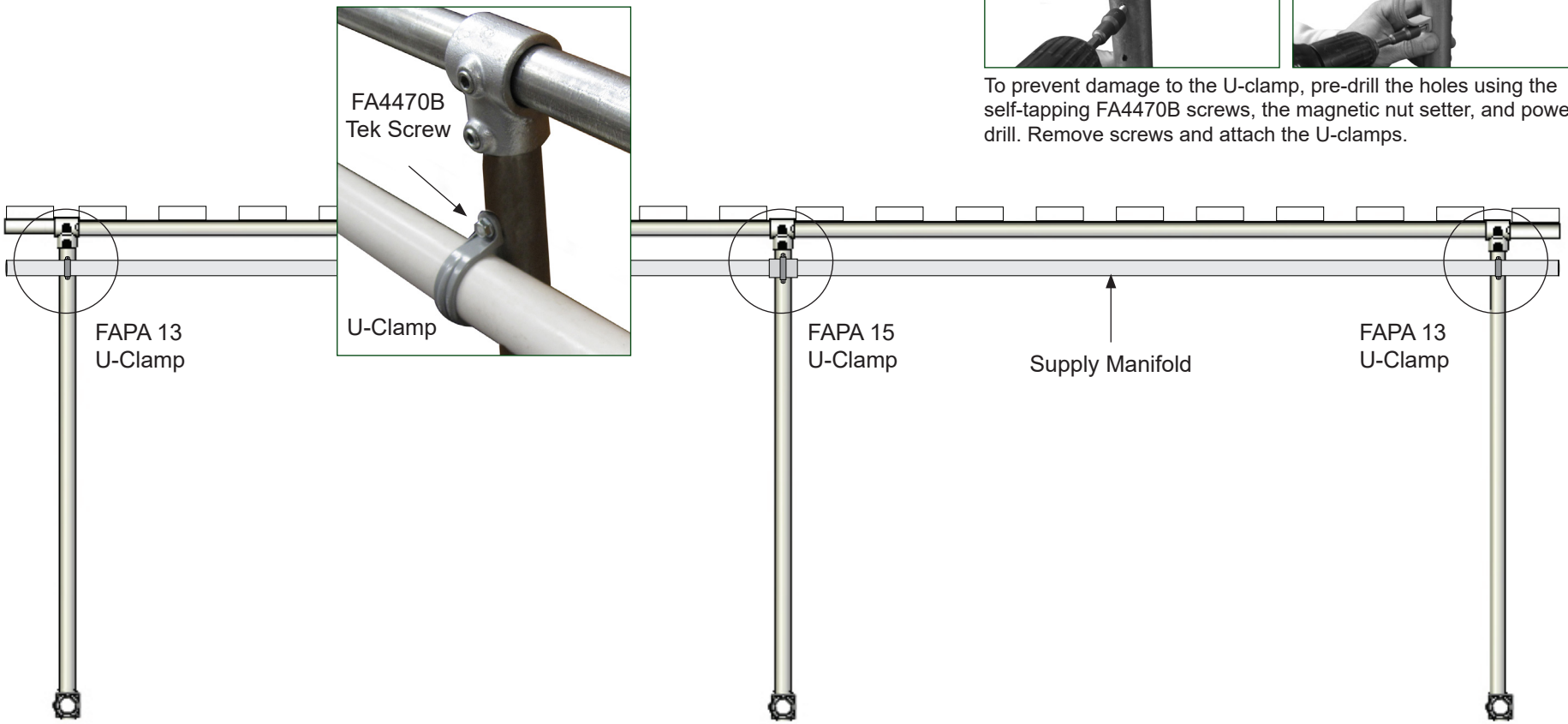
1. Move to the high end of the support frame *opposite the drain tube* and attach one FAPA13 U-clamp to each outer leg. Do not fully tighten the screws at this time. Consult the diagram below for U-clamp positions.
2. Take the supply manifold with the attached elbow and slide it into the U-clamps from one end. Loosen the U-clamp mounting screws slightly if needed. Position the elbow at the end where the supply line from the reservoir will be located.
3. Position the pvc tube in the clamps as desired and tighten the U-clamp mounting screws to secure the tube. Elbow opening will point down.
4. Move to the center leg of the frame and install the FAPA15 U-clamp. Install this clamp over the coupling at the center of the supply tube if Step 1 of Procedure 7 was followed. Supply tube should be level across the frame width.



Measure 1" down from the tee fitting and mark leg. Use U-clamp to mark the mounting screw locations. Attach clamps to the 36" legs of the frame using the FA4470B Tek screws.



To prevent damage to the U-clamp, pre-drill the holes using the self-tapping FA4470B screws, the magnetic nut setter, and power drill. Remove screws and attach the U-clamps.

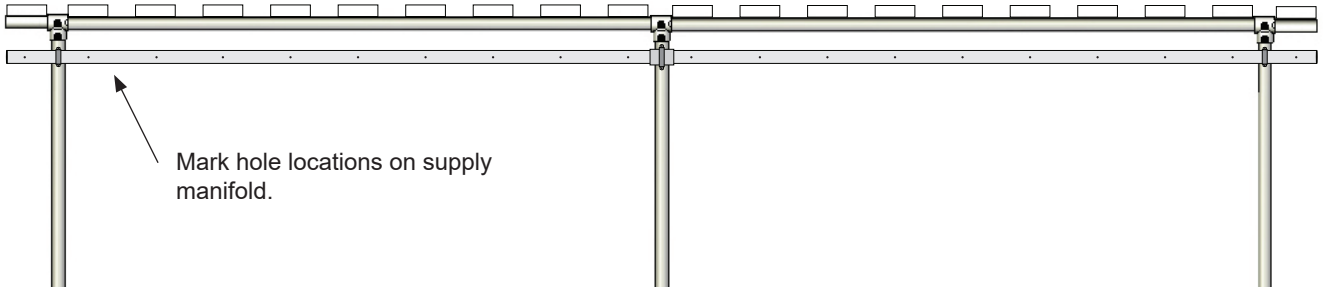


8

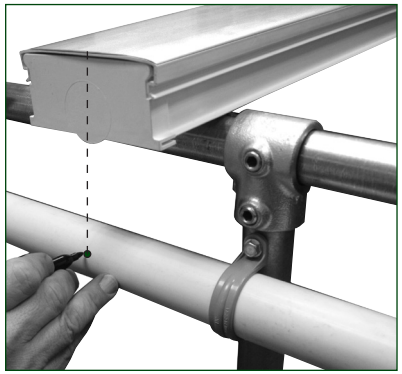
INSTALL THE NUTRIENT SUPPLY MANIFOLD AND ADD TUBE FITTINGS (continued)

5. Adjust channels so all are square on frame and evenly spaced. Using the channel position as a guide, mark one (1) supply line location on the pvc tube *for each 12' channel*. Use the print on the pvc supply tube to keep the holes aligned. See sample frame in the photos below.
6. Using a ***3/8" drill bit*** — a step bit is highly recommended — drill holes in PVC tube for top hat grommets at each of the marks. Repeat this step to drill the remaining supply manifolds.
7. Insert one 115820 top hat grommet into each 3/8" hole in the PVC tube. Dip grommet in water for easier installation. Wipe off chalk line if desired. Verify through holes in grommets. Puncture if necessary.

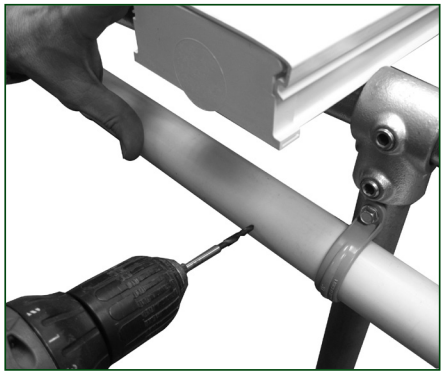
   ATTENTION: Grommet fit should be snug. If grommet seems loose or slides into hole with little effort, verify you have drilled holes using a 3/8" bit. ***Grommets will leak if hole diameter is too large.***



IMPORTANT: Verify there is an open hole through the grommet before installing. Puncture through if necessary.

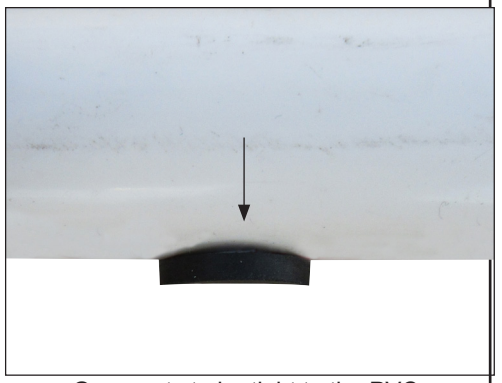


Align marks with centers of the channels.



Drill holes.

Insert grommets.

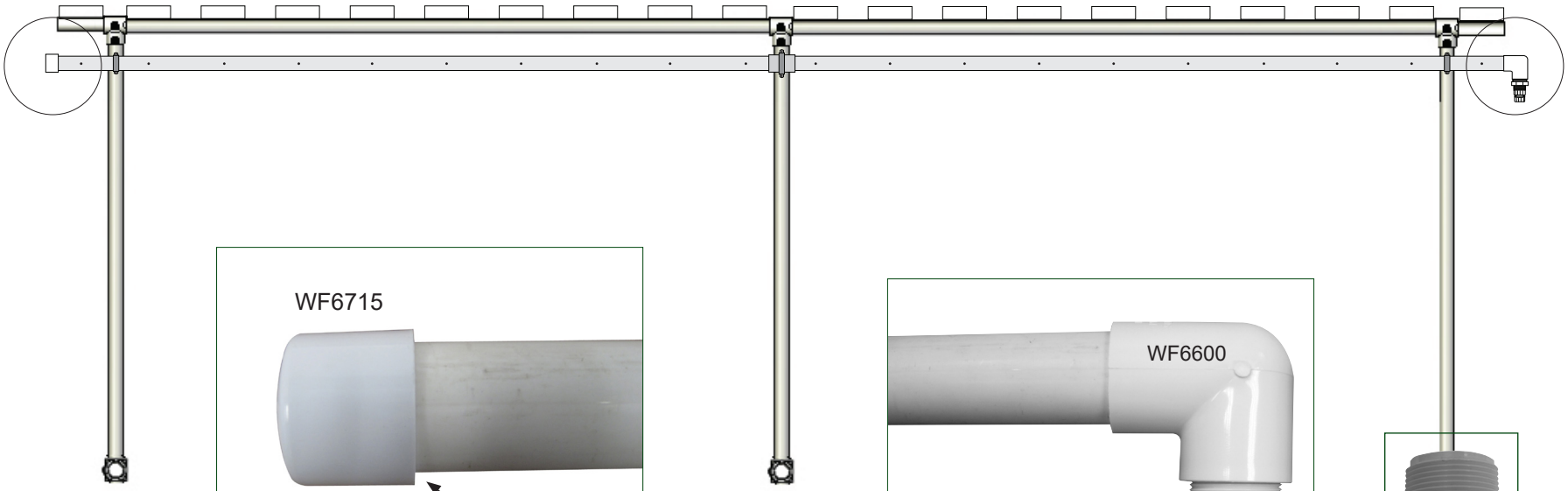


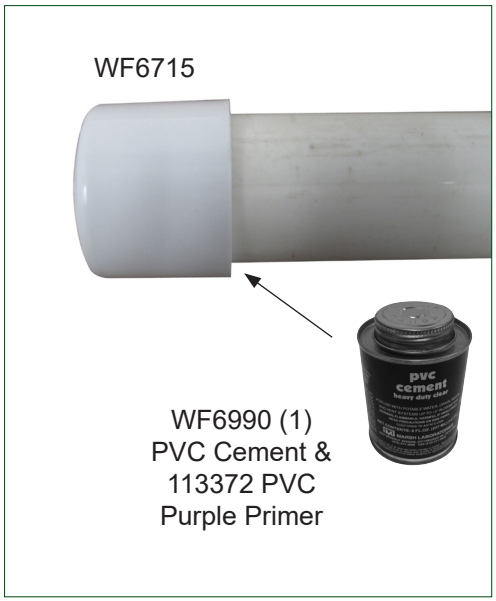
Grommets to be tight to the PVC.

8

INSTALL THE NUTRIENT SUPPLY MANIFOLD AND ADD TUBE FITTINGS (continued)

8. Verify that the manifold is clean, apply pvc primer and cement around open end and inside cap, and slide WF6715 cap onto tube to seal end. Wipe off the excess cement if needed and allow to dry.
9. Move to the elbow (WF6600) end of the manifold and install the Nutrient Manifold: Supply End fitting assembly. Wrap threads 3-4 times with thread-sealing tape and thread fitting into the elbow. Tighten until snug, but do not overtighten. Have an assistant hold the elbow with a pipe wrench or large adjustable pliers to prevent applying unwanted force to the elbow. Consult the Quick Start section of this guide if you need to assemble the fittings.
10. Continue with the next procedure.





Nutrient Manifold:
Supply End Fitting

9

CUT AND INSTALL SUPPLY LINES

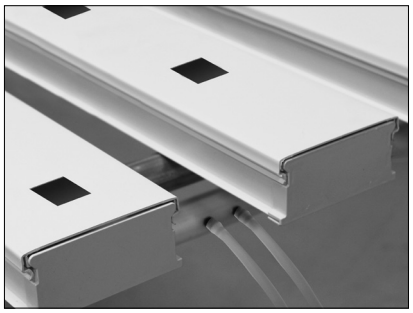
1. Cut twenty (20) twelve inch (12") pieces of 111046 hose. Use a utility knife or scissors to create a clean, smooth cut.
2. Slide one twelve inch (12") hose into each of the supply manifold grommets (115820)—ten in all. Wet the hose end for easier installation if needed.
3. Take the lids for the 12' channels and slide these into place on each channel. Have an assistant brace the end of each channel to keep it in place. For best results and plant growth, verify that the holes in the lids are offset as shown in the photo below.

   NOTE: If it is too difficult to hold the channels and slide the lids into place, lift each channel from the support frame and snap the lid into place. Wetting the lips of the lid with a damp cloth may also help with the installation.
4. At the supply manifold end of support frame, mark the one (1) supply hose location on the lid. Marks should align with the fittings and tubes on the supply manifold.
5. Slide the first lid so it extends over the end of the 12' channel. Mark the one (1) supply hose hole location on the lid and drill the holes using a 5/16" drill bit.

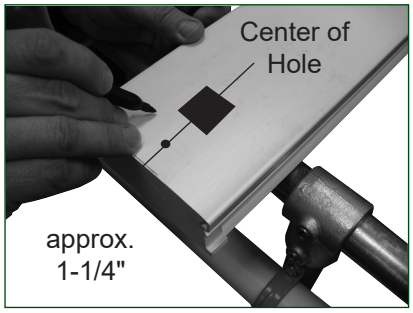
   NOTE: Sliding the lid out over the end of the channel prevents shavings and debris from dropping into the channel during drilling. Holes can be drilled with the lids in place; try not to allow debris to drop into the channels.
6. After drilling the hole, wipe the shavings from the lid (top side and underside), slide the lid back into position, and insert the hose into the hole for that channel. *Trim the end of each hose at an angle for easier installation.*
7. Repeat this process to drill the holes and connect the supply hoses for all remaining 12' channels.
8. Continue with the next procedure.

1. Cut the 12" supply tubes from the 111046 poly tubing

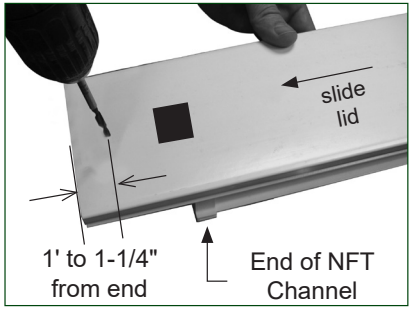
2. Slide one tube onto each of the supply manifold 115820 grommets.



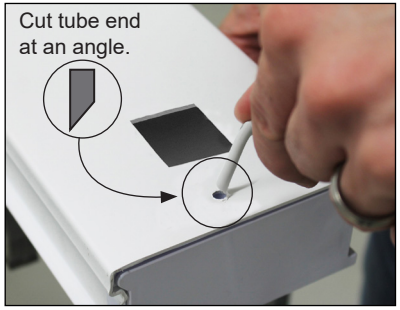
3. Installed lids with holes offset to promote plant growth. Return channel end is shown.



4. Mark hole locations for the nutrient supply tubes.



5. Slide lid out over the end of the channel and drill 5/16" holes for the supply tubes.



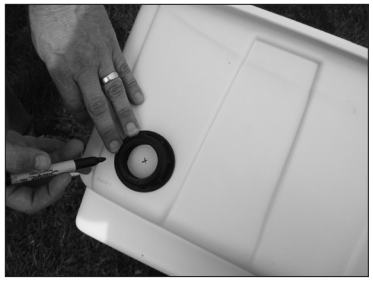
6. Slide lid back into position flush with the end of the channel and insert a supply tube from the manifold into each hole.

10 DRILL HOLES IN RESERVOIR AND COVER

Drill the 1-3/4" Main Pump Hole

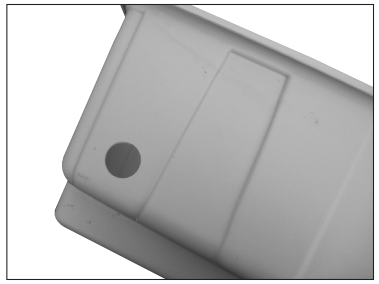
Drill a hole in the reservoir for the main pump fittings using a 1-3/4" hole saw. Wipe the resevoir clean to prevent loose shavings from clogging the filter and fittings once the system is running. **NOTE:** Actual reservoir and cover may differ from what is shown.

Drill the hole at the deep end of the reservoir opposite the raised capacity numbers.



Separate the lock collar from the adaptor and use it to mark hole location. Collar must rest flat against the reservoir surface.

Using a 1-3/4" hole saw and drill, drill the hole in the reservoir.



Remove shavings from the hole and from inside the reservoir.

Drill the 2-1/2" Drain Tube Hole

1. Determine in which corner you want to drill the drain tube hole. This is the corner directly under the tee fitting outlet in the drain manifold.
2. Remove the cover from the reservoir and drill the drain hole in the corner using a 2-1/2" hole saw. Do not drill cover over the reservoir. Debris will damage the pump and clog the filter.

ATTENTION: Use a 2-1/2" hole saw to drill the holes in the reservoir cover.

Move cover off reservoir. Place on support to drill the 2-1/2" drain hole.

ATTENTION: Depending on the tank position, the hole for the return drain pvc can be drilled through the cover in any position that best suits the layout of the system and the tank.

This example shows using the corner for the drain tube position. The raised corner positions on the cover are the recommended locations for drain tube holes.

Drill the 5/16" Holes for the Air Pump Tubing

1. Take a 5/16" drill bit and drill two holes through the cover in the raised area. See photo below for location.

2. Remove all debris from the cover and around all holes to prevent it from dropping into the reservoir when cover is set in place.

11

INSTALL FITTINGS AND CONNECT CIRCULATION PUMP

CONSULT THE QUICK START SECTION NEAR THE BACK OF THIS GUIDE TO IDENTIFY THE FITTINGS.

1. Install the circulation pump fittings *inside* the reservoir. Consult the Quick Start section for fitting identification numbers.

Circulation Pump Assembly
(Inside the Reservoir)

Take the Circulation Pump Assembly for inside the reservoir, remove the lock collar if needed and insert the assembly through hole as shown. ***Position the rubber washer inside the reservoir.***

Install the lock collar and tighten to secure the assembly to the reservoir.

Photo shows the assembly installed inside the reservoir.

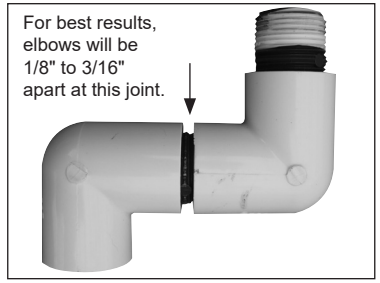
2. Install the tank-to-pump fitting *outside* the reservoir. Separate the WF3412 union as shown and set aside.

Tank-to-Pump Fitting Assembly

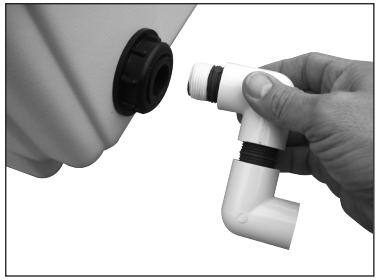
Attach this half to reservoir. See photo below right.

Attach this part of the WF3412 to the pump intake port. See steps on next page.

Use two WF2860 unions and two WF1520 elbows to assemble the fittings. Tape the threads.

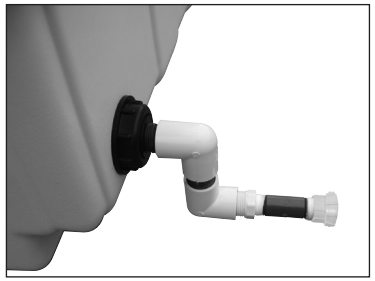


Connect the two fitting assemblies. Tape the threads before assembly.



Attach the assembly to the bulkhead adaptor.

Position the assembly as shown before connecting the pump fittings.

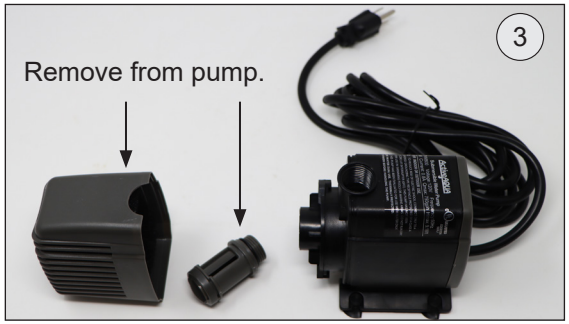


Attach half of the tank-to-pump fitting assembly.

ATTENTION: The elbow assembly is designed to allow the pump to rest on the ground once it is attached. This reduces stress on the fittings while providing a stable mount for the pump. Additional customer-supplied supports can be added under the pump if needed.

11 INSTALL FITTINGS AND CONNECT CIRCULATION PUMP—continued

3. Remove pump cover and fitting from pump intake port. ***These parts are not needed for this application.***

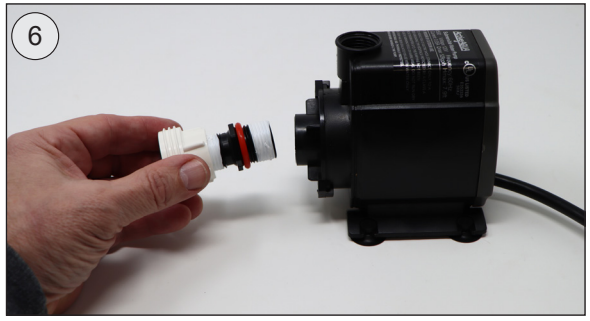


4. Take the 116844 fitting and remove the small O-ring from the 1/2" thread side. This O-ring is not needed for this application.

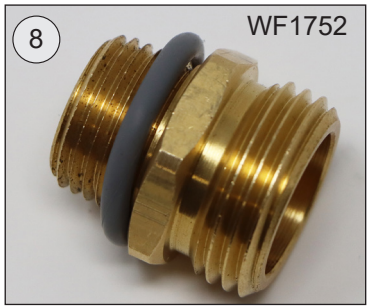
5. Take the small section from the WF3412 union (previous page) and attach it to the 1/2" threads of the 116844 fitting. Wrap threads with thread tape before connecting the two fittings.

Small half of WF3412 connected to 116844.

6. Wrap the 5/8" threads with thread tape. Attach fitting assembly to intake port of pump. *Hand-tighten fitting only!* Seat O-ring in pump housing.



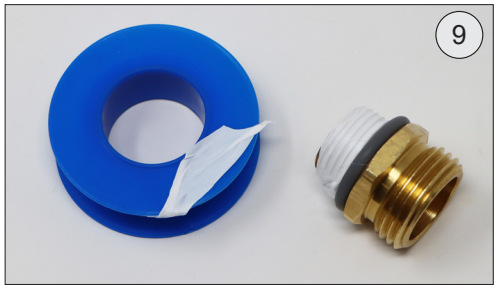
7. Locate the ***large O-ring*** included in the pump box with the pump parts. It is typically packaged in a plastic bag. O-ring is usually gray.



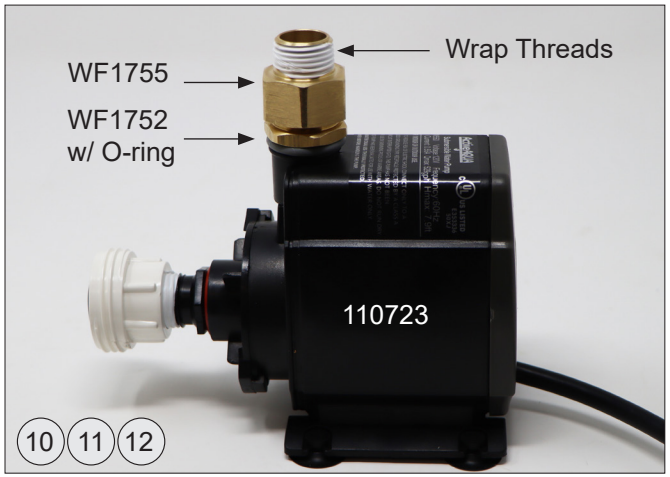
8. Carefully slide the O-ring over the ***1/2" (smaller) threads*** of the WF1752 fitting.

11 INSTALL FITTINGS AND CONNECT CIRCULATION PUMP—continued

9. Wrap the 1/2" threads of the fitting with thread tape.



10. Attach fitting to water pump outlet (top of pump) as shown. Hand-tighten until fitting is snug.



ATTENTION: ***Do not overtighten! Doing so may crack the pump housing and deform the O-ring causing leaks.***

11. Attach WF1755 fitting to the WF1752 fitting and tighten. ***Hold the WF1752 fitting with a wrench to prevent it from turning as you tighten the fitting.***

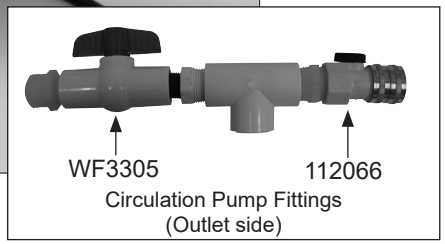
12. Wrap the threads of the WF1755 fitting with thread tape.

13. Attach the WF2372 bushing to outlet fitting assembly attached to pump.

IMPORTANT: Hold the installed brass fitting assembly with a wrench to prevent it from turning during the installation of the WF2372 fitting.

14. Attach the circulation pump fitting manifold to the pump outlet port.

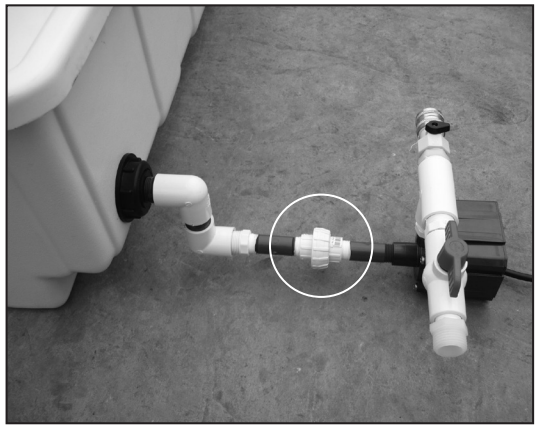
Verify that the WF3305 in-line valve is open; verify that the 112066 shut-off valve is closed.

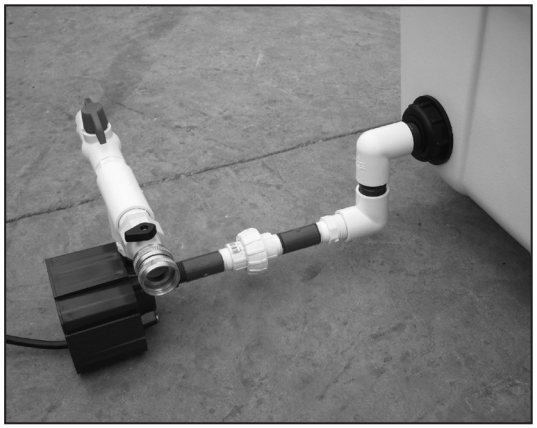


Circulation Pump Fittings
(Outlet side)

11 INSTALL FITTINGS AND CONNECT CIRCULATION PUMP—continued

15. Once all fitting assemblies and manifolds are in place, connect the pump to the reservoir.





ATTENTION: Set the reservoir into position on a level surface where it will be used. Connect the pump to the fitting assembly attached to the reservoir. Valve positions may differ for your application. Assemble to best serve your needs.

NOTE: Pump shown in the photos may differ from actual pump. The latest design will show the 110723 pump noted above and in other photos throughout this guide.

16. Continue with the next section.

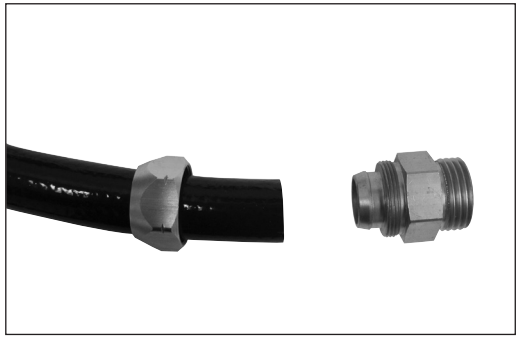
12

CREATE SUPPLY HOSE

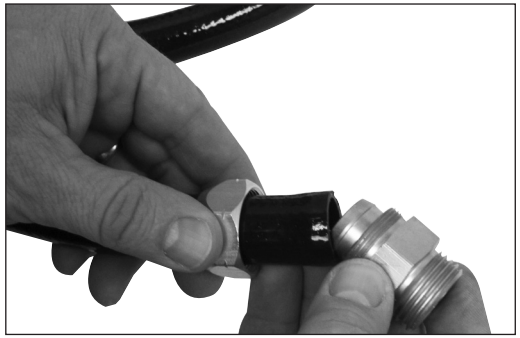
1. Position the reservoir and pump in the desired location at the return channel end of the main channels. Use caution when moving the assembly. ***Support the pump to prevent damage to the fittings and reservoir.***
2. Using the 103385 brass male and female fitting and the WF6504A hose, create a supply hose of the required length. The photos below show the assembly of a single hose. *Hose will have a male and female end.*

103385 (1)

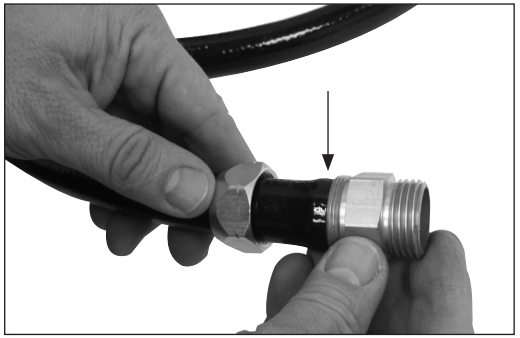
NOTE: Approximately 15' of hose is provided for the supply hose. This can be cut to length, or left as shipped. Before cutting, determine that the drain manifold will also reach to the reservoir. See Procedure 14. Reposition reservoir as needed.



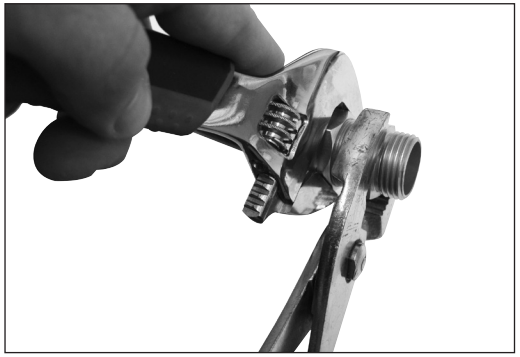
1. Slide brass collar onto the hose.



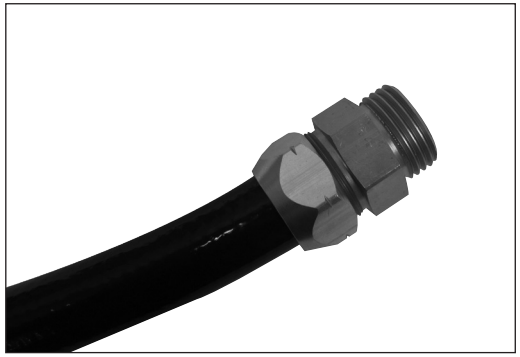
2. Insert fitting into hose end.



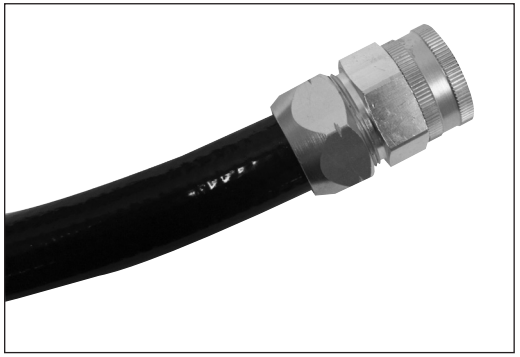
3. Verify that hose is seated tightly against the fitting.



4. Start collar onto the fitting treads and tighten.



5. Completed male fitting end.



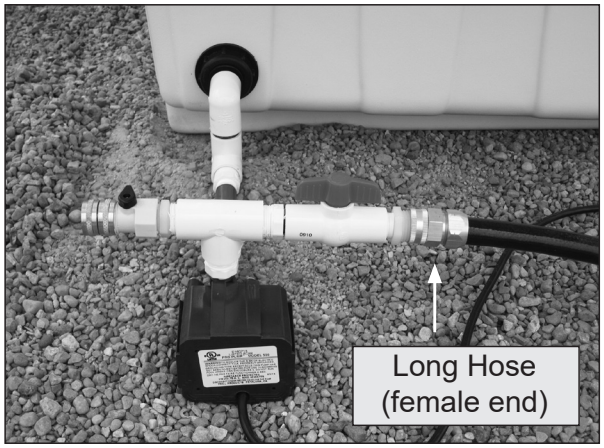
Completed female fitting end.

13

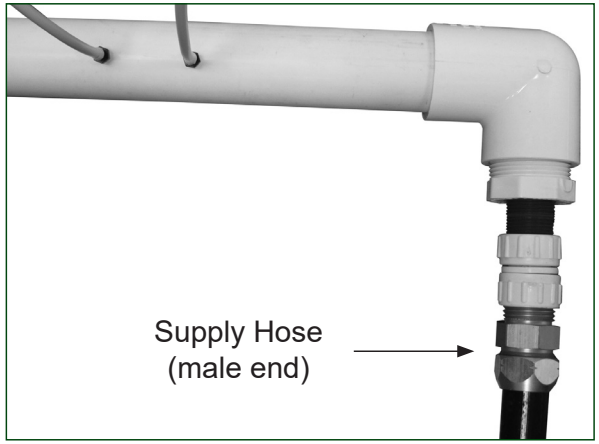
CONNECT THE SUPPLY HOSE TO THE OUTPUT FITTING OF THE PUMP

1. Take the supply hose and connect it to the output side of the circulation pump.
2. Connect hose to the inlet side of the nutrient supply manifold.
3. Verify that all connections are tight.

STEP 1



Connect supply hose to the output side of the pump (above) and to the inlet side of the nutrient manifold (right),



STEP 2

Inlet side of the nutrient supply manifold.

ATTENTION: ACTUAL PUMP ASSEMBLY MAY DIFFER FROM EXAMPLE SHOWN IN PHOTOS.

14

ASSEMBLE AND INSTALL DRAIN MANIFOLD

Use the photos below to assemble the drain manifold. Read these notes before you continue.

- A ten (10') section of pvc is included to construct this manifold.
- Length of each pvc tube depends on the position of the reservoir and frame.
- Dry fit all connections before applying primer and cement. Apply primer and cement only as directed to allow for cover removal. *Do not cement the short tube that extends from final elbow to reservoir.* This allows for cover removal and reservoir maintenance.
- Manifold will drain through the hole drilled in the cover–Procedure 10.
- Remove the plugs to periodically clean the drain tube.

WF1576
PVC 2" Elbow

WF6990 PVC Cement & 113372 Purple Primer

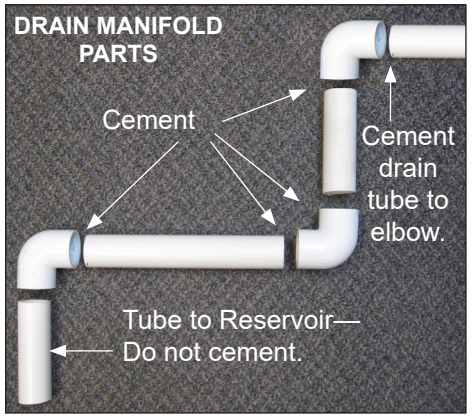
ATTENTION: Dimensions for tube sections are not provided to allow for minor adjustments in reservoir position. A ten foot (10') section of pvc tube is included for this manifold.

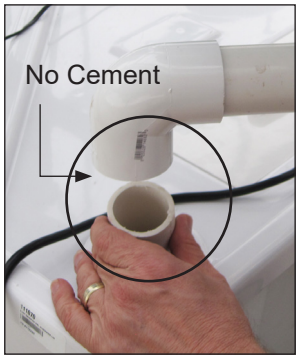
DRY FIT ALL FITTINGS BEFORE YOU APPLY CEMENT!

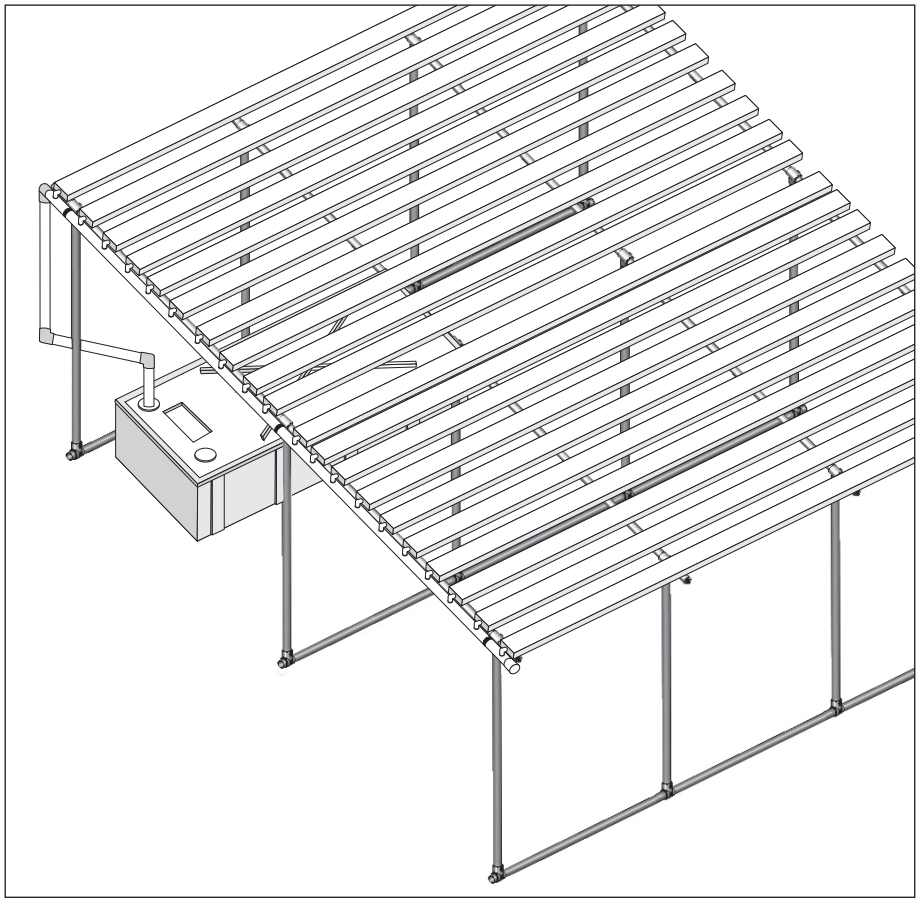
Set reservoir in the desired position. Estimate length of tubes and fit together.

Dry fit all pieces to get the best fit. Do not apply primer and cement until all pieces are cut and ready to slide together.

Assemble on the drain tube to set the correct angle of the manifold back to the reservoir drain hole.







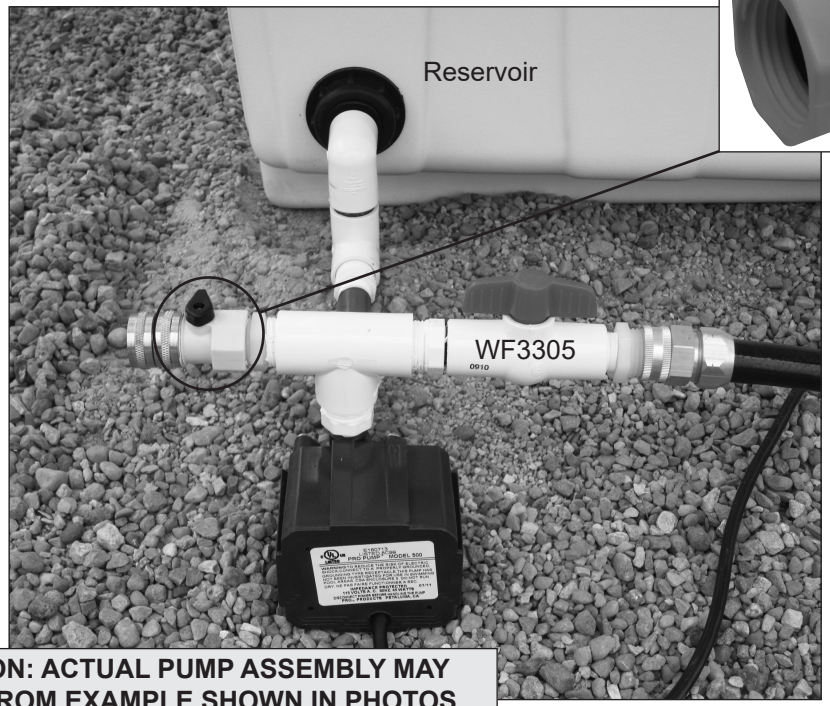
15

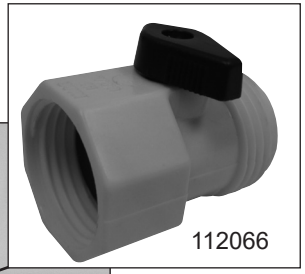
TEST THE SYSTEM AND CHECK FOR LEAKS

1. Verify that the pvc ball valve (WF3305) is open and the 112066 in-line shutoff valve is closed.
2. Fill the reservoir until the inside fittings are submerged and check the reservoir fittings and those between the pump and reservoir for leaks. If no leaks are found, finish filling the reservoir.

   NOTE: If leaks are found, tighten the loose fittings. If that does not work, plug the intake inside the reservoir (see photo below right) using the plug, take the external fitting assembly apart, apply additional thread-sealing tape to the threads and reassemble. Remove the plug and check again for leaks. ***Do not fill reservoir and operate the pump when leaks are present or when the WF2950 plug is installed.***
3. Place the cover on the reservoir and ensure that all hose connections are tight. Check all supply manifold connections and tubes.
4. Connect the main pump to power to begin circulating the water throughout the system.
5. Check all channel end caps and pvc fittings for leaks. If leaks are detected, turn off the pump and allow the water to drain back to the reservoir. Next, dry the channel and end cap and apply additional 111699 adhesive to seal the seam. After the cement is dry, test again for leaks. Once the system has passed the leak test, it is ready for your plants.

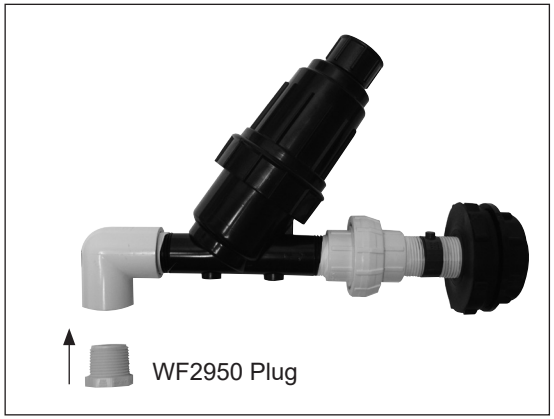
NOTE: Adjust water flow as needed using the WF3305 ball valve once the system is running.





Close this valve during operation and when checking for leaks.

WARNING: To prevent damage to the pump, do not operate the system when the WF2950 plug is in place!



To disassemble the external fittings or remove the pump *without draining the reservoir*, take the WF2950 plug and attach it to the intake fitting of the Circulation Pump Fittings: Inside the Reservoir. Once the plug is in place, disassemble the external fittings or remove the pump as needed, reassemble, and remove the plug from the intake fitting.

ATTENTION: ACTUAL PUMP ASSEMBLY MAY DIFFER FROM EXAMPLE SHOWN IN PHOTOS.

16

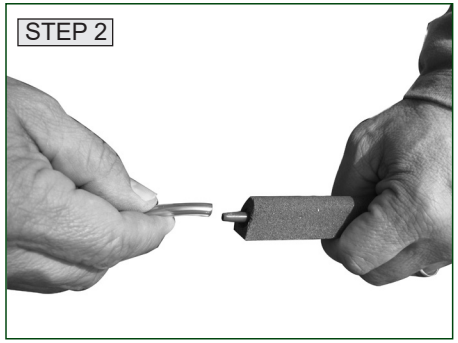
ATTACH THE AIR PUMP AND AERATOR STONE

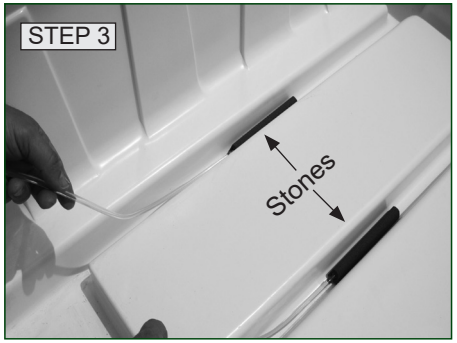
1. Choose a pump position and use it to determine the length of each air tube. This system requires two air supply tubes to connect the pump to each air stone, which will be placed at the bottom of the reservoir. Cut two air tubes from the supplied 110091 tubing. These must be long enough to run from the pump position, through the cover opening, and to the bottom of the reservoir.

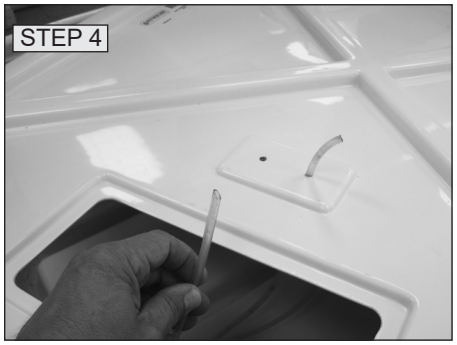
   ATTENTION: Position the air pump at a level that is ***above the reservoir at all times to prevent siphoning*** of the reservoir nutrient solution. In this example, the air pump will rest on the reservoir cover.

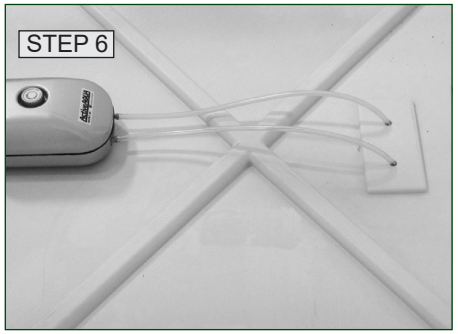
2. Attach one 109260 air stone to the end of a tube. Repeat for the remaining air supply tube.
3. Lower each stone and air tube into the reservoir solution. Position the stones away from the intake end of the main pump fitting assembly.
4. Place the cover on the reservoir and feed the tubes up and through the opening.
5. Place the cover on the reservoir and connect the free end of each air tube to the air pump.
6. Place the air pump on the cover (as shown) or in the position chosen in Step 1.
7. Connect the pump to power and test the operation. Lift the reservoir cover to verify that air is filtering through each air stone.
8. Monitor the air system regularly to ensure proper operation of the aerator system.

ATTENTION: Do not attach air pump to timer. Pump must run continuously when system is in operation.









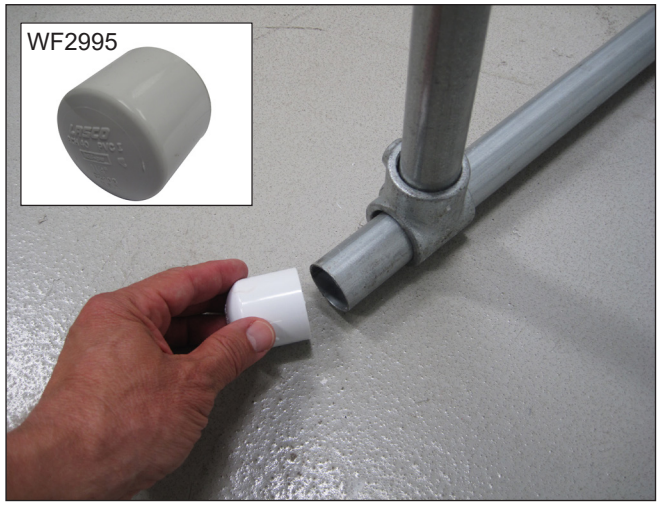
ATTENTION: Always position the air pump above the reservoir/ nutrient level to prevent siphoning of the nutrient solution.

Reservoir in the photo 3 is empty to better show the positions of the stones when place inside.

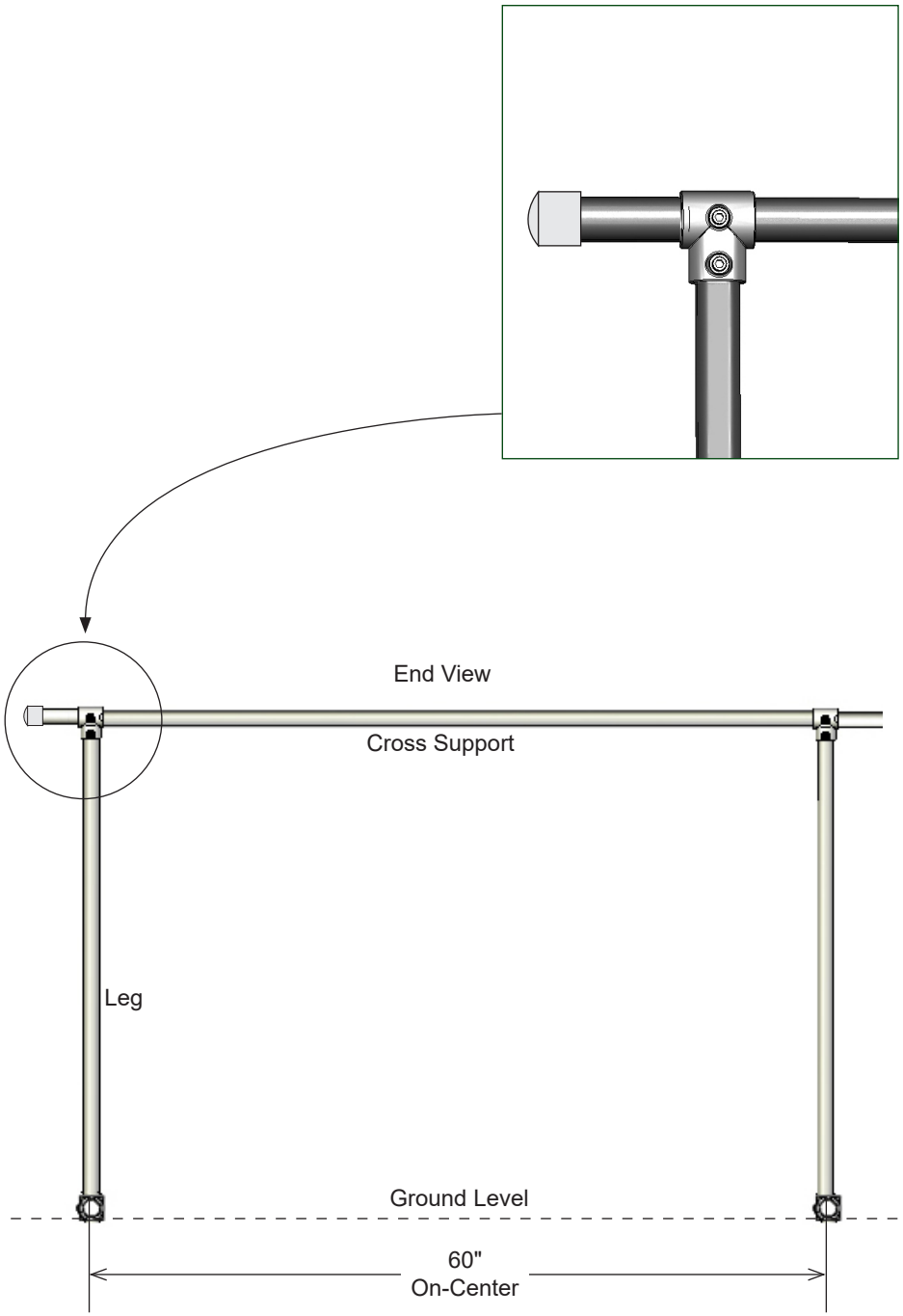
17

INSTALL FRAME CAPS

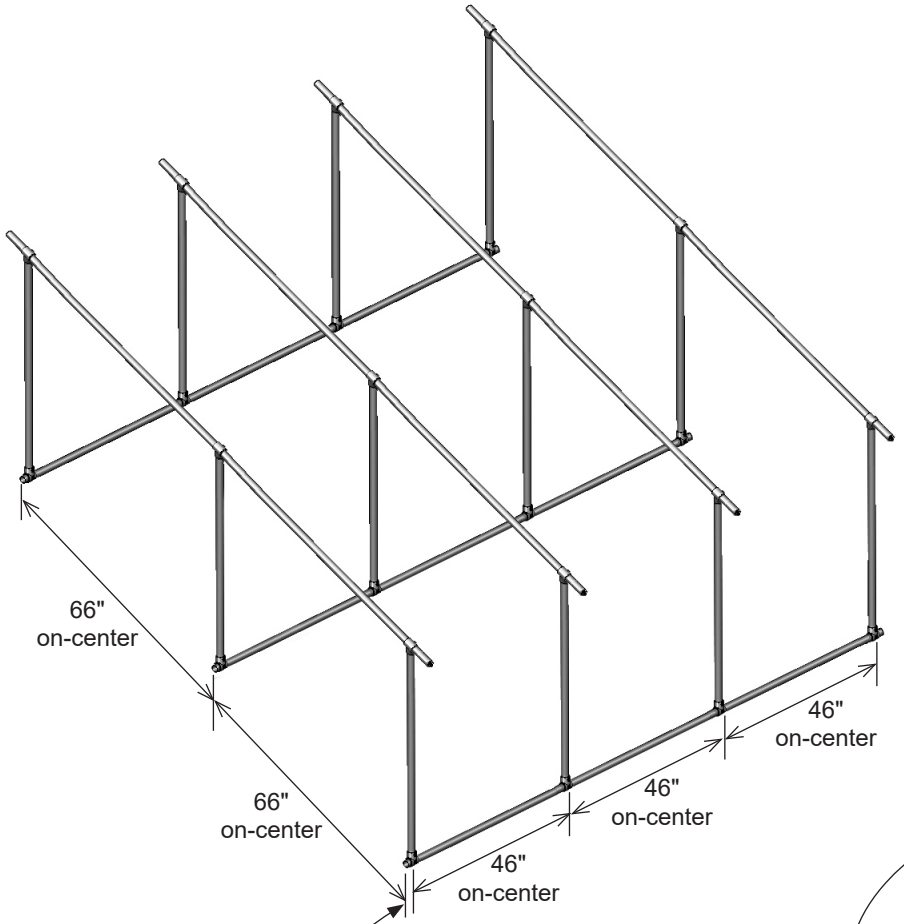
Install the WF2995 pvc caps to cover the end of each open pipe.



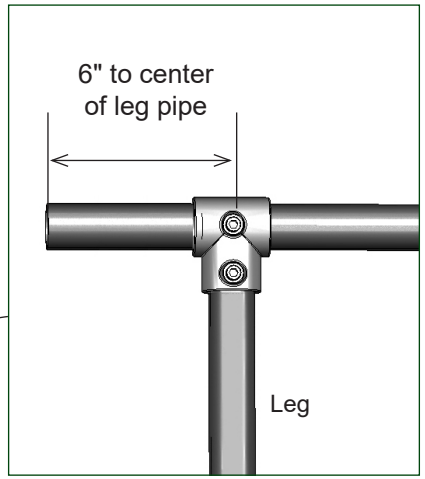
ATTENTION: Do not cement or drive the caps onto the pipe using a hammer. If needed, lightly tap to start on pipe and to hold in place.

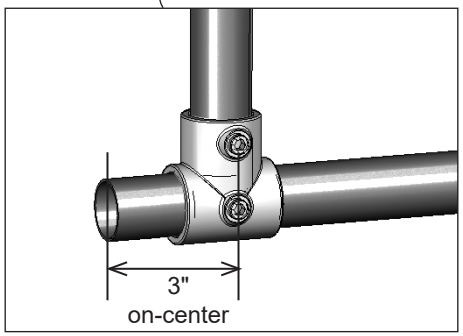


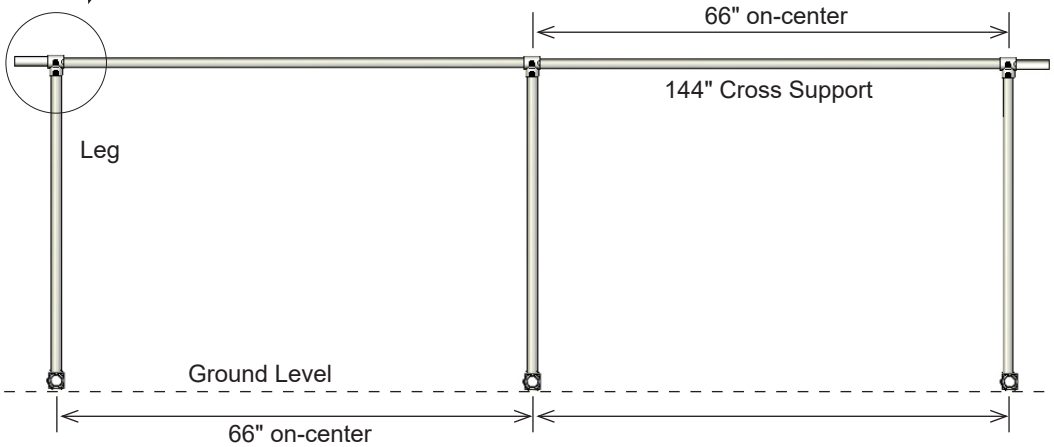
SUPPORT FRAME DIMENSIONS AND VIEWS



End View

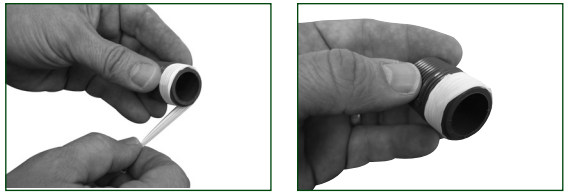




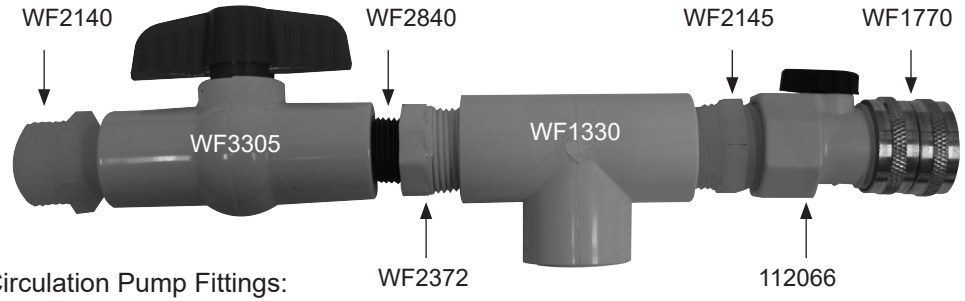


CONSTRUCT ALL FITTING ASSEMBLIES

1. Wrap all fitting threads 3-4 times in a clockwise direction with the supplied thread-sealing tape as shown.
2. Construct the fitting assemblies as shown and set aside until needed.

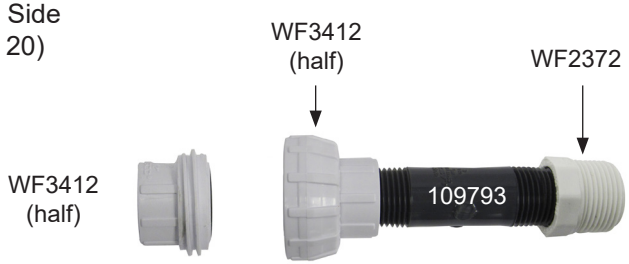


Apply tape to all threads.



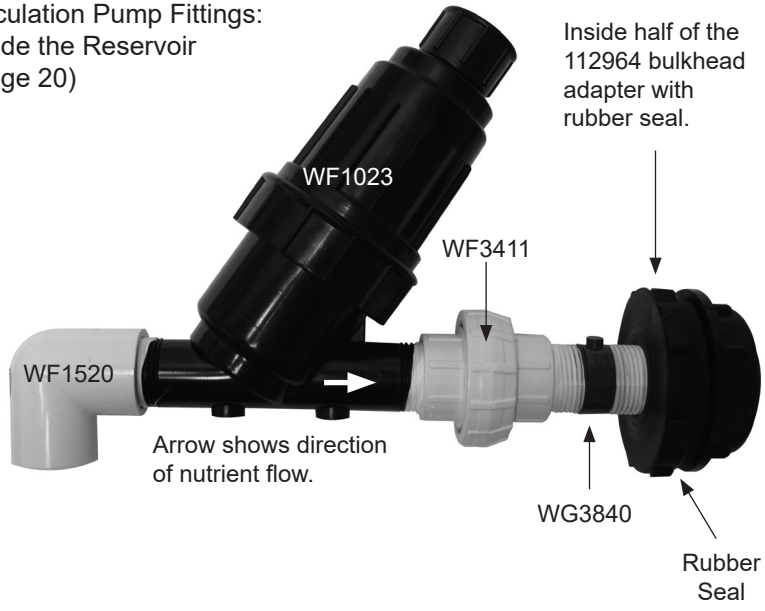
Circulation Pump Fittings:
Outlet Side
(Page 22)

Tank-to-Pump Fittings:
Intake Side
(Page 20)

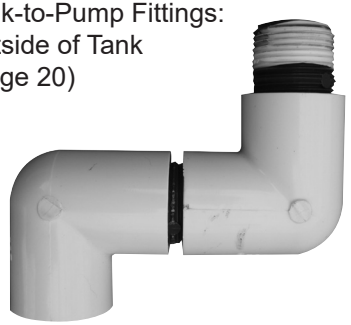


Attach this half to fittings attached to the reservoir.

Circulation Pump Fittings:
Inside the Reservoir
(Page 20)



Tank-to-Pump Fittings:
Outside of Tank
(Page 20)



Nutrient Manifold:
Supply End
(Page 17)

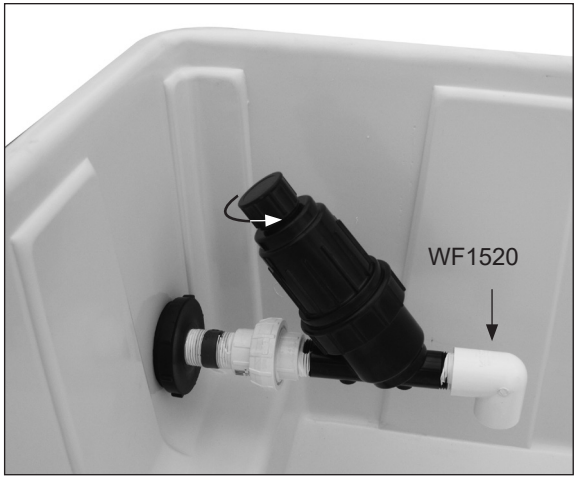
CLEAN THE FILTER SCREEN

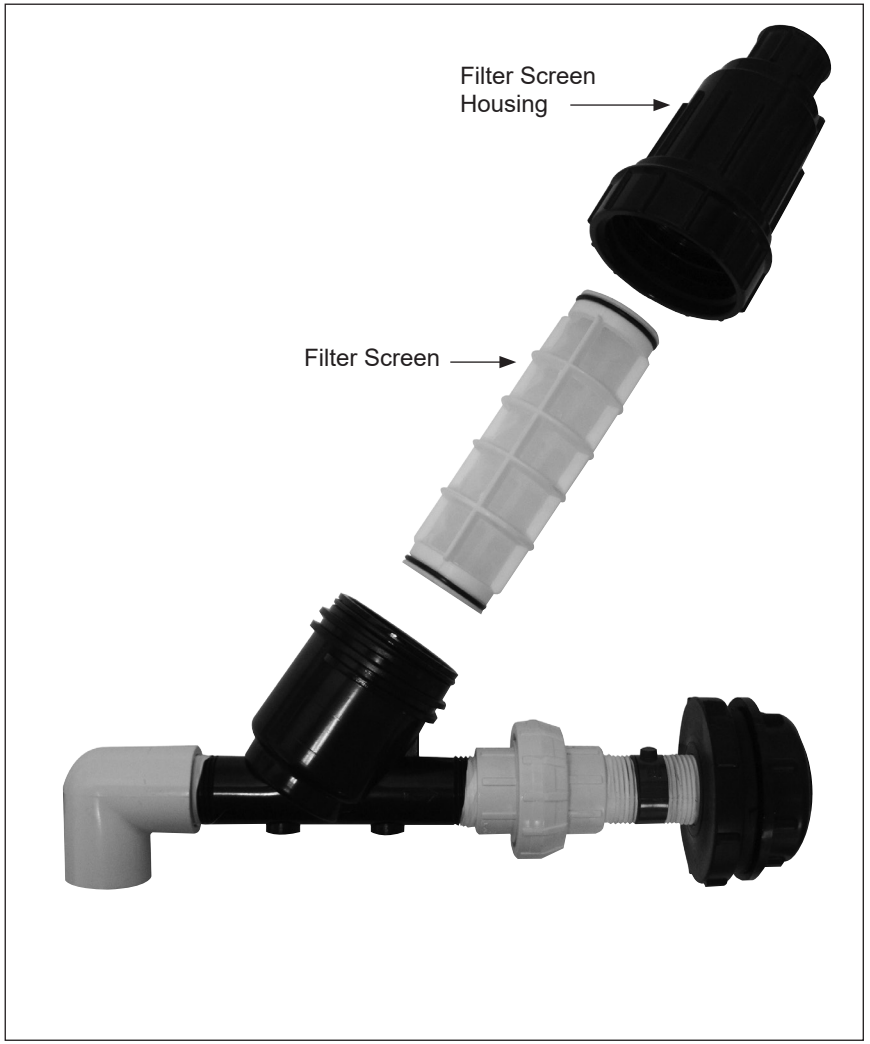
For best results, clean the filter screen regularly or when the flow rate changes unexpectedly. Complete these steps to clean the filter screen.

1. Turn off the main circulation pump and the air pump.
2. Remove the cover and set it aside. If the air pump is positioned on the cover, lift the aerator stone from the reservoir and place next to the cover.
3. Reach into the solution and unscrew the filter screen housing and set it outside the reservoir.
4. Carefully lift the screen from the assembly and rinse it with clean water.
5. After cleaning, reinstall the screen and filter housing.
6. Set the aerator stone into the reservoir (if needed), set the cover on the reservoir and turn on the pumps.

ATTENTION: While removing the filter screen housing, hold the fitting assembly steady by gripping the WF1520 elbow.

DO NOT APPLY FORCE TO THE BULKHEAD ADAPTER ATTACHED TO THE RESERVOIR.



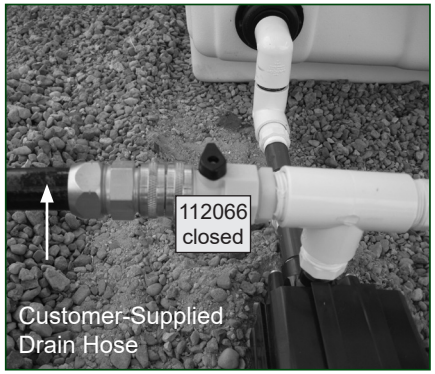


DRAIN THE RESERVOIR

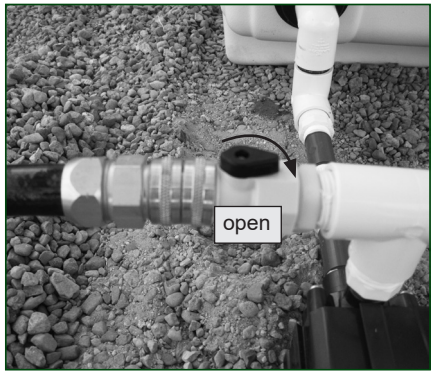
The 112251 Hydroponic System is designed to easily drain the reservoir. These steps describe one way to drain and refill the reservoir.

1. Disconnect the electricity from the main pump and air pump and allow the nutrient solution to drain back into the reservoir.
2. Close the WF3305 ball valve.
3. Take a drain hose (not supplied) and connect it to the WF1770 brass fitting attached to the 112066 in-line shutoff valve.
4. Place the free end of the drain hose in the container where the used nutrient solution will be stored and open the 112066 in-line shutoff valve.
5. Turn the pump on and pump the solution from the reservoir. Turn the pump off when the reservoir is empty.
6. With the reservoir empty, disassemble and clean the in-line filter, which is inside the reservoir. See the previous page for additional details. Reassemble the filter before you refill the reservoir.

STEP 2: Close valve.



STEP 3: Connect customer-supplied drain hose to drain fitting. In-line valve is closed.



STEP 4: Place end of hose in container and open shut-off valve. In-line valve is open. Once drain hose is connected, turn on pump to drain reservoir.

7. Close the 112066 in-line valve and refill the reservoir. If you use the drain hose during this process, verify that it is clean. Run clean water through the hose before you use it to prevent contamination of the new nutrient solution.
8. With the reservoir filled, open the WF3305 ball valve and turn on the pumps.

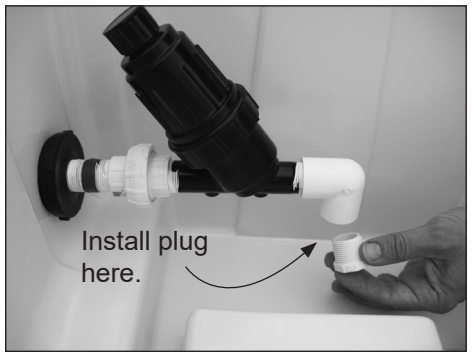
ATTENTION: ACTUAL PUMP ASSEMBLY MAY DIFFER FROM EXAMPLE SHOWN IN PHOTOS.

REMOVE AND REPLACE THE MAIN PUMP

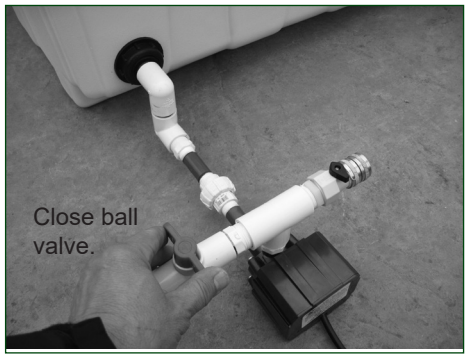
The 112251 Hydroponic System is designed for easy maintenance. Complete these steps to remove the main pump.

1. Disconnect the electricity from the main pump and air pump and allow the nutrient solution to drain back into the reservoir. *Be sure to keep the air pump above the level of the reservoir solution to prevent siphoning.*
2. Take the WF2950 plug and install it in the intake elbow attached to the filter inside the nutrient reservoir. This prevents the solution from leaking out of the reservoir when the pump is removed. (Reservoir in the photo is empty to better show where to install the plug.)
3. Close the ball valve (WF3305) to prevent solution from leaking out of the supply hose when the pump is disconnected.
4. Outside the reservoir, disconnect the main pump and fitting assembly by separating the WF3412 union fitting. ***Do not disconnect the supply hose from the assembly.***
5. Disconnect the pump from the fitting assembly and replace as needed.

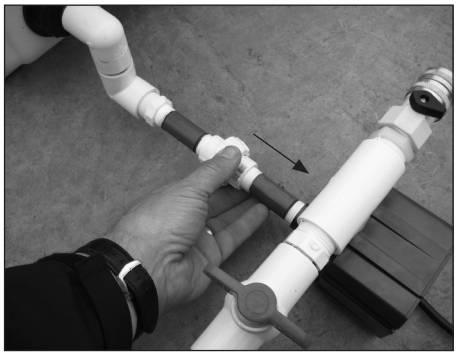
STEP 2: Install the WF2950 plug to prevent solution for leaking.



STEP 3: Close the ball valve to keep solution in the main supply line.



STEP 4: Disconnect the pump assembly from the reservoir.



STEP 5: Remove fittings and replace the pump as needed.

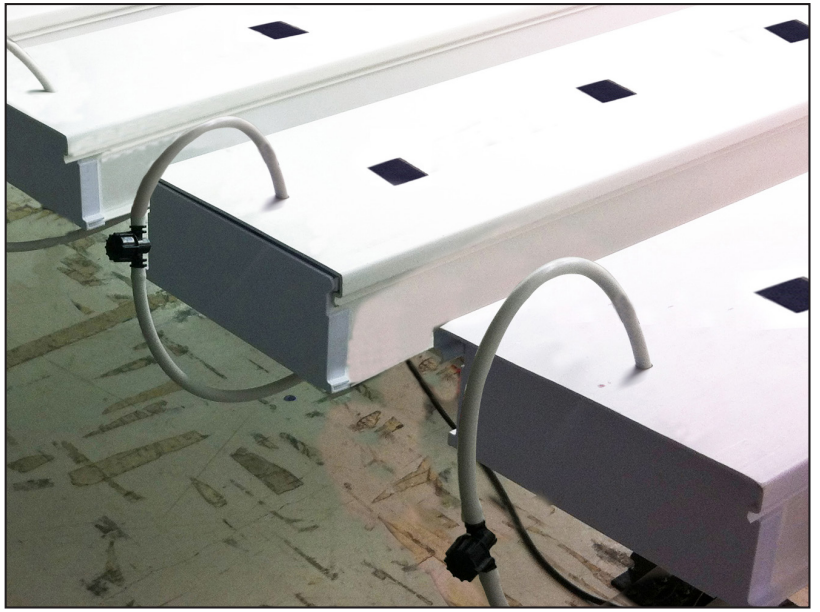
ATTENTION: ***Open the ball valve and remove the WF2950 plug before operating the new pump. NEVER OPERATE THE PUMP WHEN THE WF2950 PLUG IS INSTALLED. DOING SO MAY DAMAGE THE PUMP AND FITTINGS. READ THE DOCUMENTATION INCLUDED WITH THE PUMP FOR ADDITIONAL INFORMATION.***

NOTE: The 110720 pump is no longer available. It has been replaced with the 110723 pump.

ATTENTION: ACTUAL PUMP ASSEMBLY MAY DIFFER FROM EXAMPLE SHOWN IN PHOTOS.

ATTENTION: Actual system may differ from those shown here for reference only.

ATTENTION: NFT system shown with additional holes in two lids for nursery channels. Customer cuts holes in lids if nursery channels are desired.



ATTENTION: Actual positions of drain tubes and reservoir may differ from what is shown in the sample system above.

ATTENTION: ACTUAL PUMP ASSEMBLY MAY DIFFER FROM EXAMPLE SHOWN IN PHOTOS.