



HydroCycle Commercial NFT Systems



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

112615	Commercial NFT System for a 30' x 48' Greenhouse
112616	Commercial NFT System for a 30' x 60' Greenhouse
112617	Commercial NFT System for a 30' x 72' Greenhouse
112618	Commercial NFT System for a 30' x 84' Greenhouse
112619	Commercial NFT System for a 30' x 96' Greenhouse
112622	Commercial NFT System for a 30' x 132' Greenhouse

*Actual system may differ from what is shown.



Important Information

READ THIS DOCUMENT BEFORE YOU BEGIN

Thank you for purchasing this system. When properly assembled and maintained, this system 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, marker, and chalk line
- Variable speed drill (cordless with extra batteries works best)
- Metric Hex (Allen) Wrench set that includes 6mm through 8mm.
- Hammer and gloves
- Level (2'- recommended) and line level
- Utility knife
- Adjustable pliers and assorted hand tools common to plumbing and electrical work
- 1-3/8", 3" and 5" hole saws and 7/8" Forstner bit
- Drill bit set with assorted bits



ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your hydroponic table system. 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. See below.
2. Read and understand these instructions and the information included with the shipment **before** you begin.
3. Gather the tools and assistants.
4. Assemble the system.
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).



WARNING: Enlist the services of an experienced electrician when connecting power to the pump and other electrical devices.

All wiring to be completed according to established codes and practices.



DROWNING HAZARD: Never leave the tank cover off when tank is unattended. Never allow children or others within the boundary of the pump station at any time.

Always have an assistant present when completing tank cleaning and system maintenance to prevent accidents.

Disconnect the pump when performing any system maintenance.

FERTIGATION SYSTEMS

Fertigation systems can be connected to your hydroponic system to provide constant control of pH and nutrient levels in the hydroponic system.

Remember to allow space to mount the system when preparing the pump station site.

To assemble and connect a fertigation system to this hydroponic system, consult the information provided with the fertigation system.

NOTE: Additional pvc tubing and fittings may be required to connect the fertigation system. Purchase locally or call your sales representative for additional information.

Important Information

PICTORIAL GUIDE

The following graphics and photos will help identify the different parts of the NFT hydroponic system. (Some parts may not be shown.) **Keep all fittings in the shipping bags until they are needed.**



ATTENTION: A 7/8" Forstner bit is required to drill the holes to install the 111598 grommets. **This bit is not included.**



WF1386



111045



WF6780



WF2350



WF6696



WF1984



WF1576



110729



110730



110731



111044



111598



111599



111698



WF4067



AC2804



111580



111153



WF3516



111155 Strainer



111623



111624



111626



111160
2" Dual Lite Disc Filter



111149 Pump



111152 Strainer

Important Information

PICTORIAL GUIDE (continued)



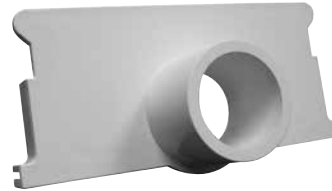
10015607
3-Way Open Corner



105940
Side Outlet Tees



10016407
Side Outlet Tees



110824
End Cap w/ Outlet



110825
End Cap No Outlet



WF6715
End Cap—Frame



110408 Poly Tube



110743
3MM Punch



WR1095 Tape



Plastic Pipe and
Tube Cutter



WF6990
PVC Cement

IMPORTANT: Do not use the WF6990 PVC cement to attach end caps to the 12' GT50 channels. Adhesive for that procedure is not included and requires additional purchase. Contact your sales associate for additional information and details.



111627
3/4" White Polyethylene Tubing



111157 (550 Gallon Tank) for commercial systems: 112615, 112616, 112617, & 112618.

111158 (1,100 Gallon Tank) for commercial systems: 112619 & 112622.



Drain
Plug

ATTENTION: Before setting and filling the tank, verify that the drain plug at the lower side of the tank is in place and tight. *Contact customer service if plug is missing.*



Heat tube with a hair dryer for easier assembly. Do not overheat!

ATTENTION: Install all fittings so they are fully inserted into the 3/4" tubing. Use a hair dryer to gently heat the tubing for easier installation. Do not overheat!


Getting Started


ASSEMBLY PROCEDURES

Below are the main steps to assemble the NFT hydroponic lettuce system. Procedures can occur simultaneously when assistants are available, or each procedure can be completed before moving onto the next. In most instances, the site and available space drive which procedures can be completed first before moving onto the next. Review this entire guide before beginning to ensure that you understand how to position and connect the different components.

1. Review this guide and all site layout diagrams and prepare the site.
2. Prepare and set the nutrient tank in position as shown in the diagrams.
3. Assemble and connect all pump, filter, and tank plumbing.

NOTE: If a fertigation system is used for the system, identify where that system will be mounted and where the storage tanks will be set. Review the photos near the back of this guide for an example. Follow the instructions provided with the fertigation system to properly connect it to your NFT system.
4. Assemble all 1.66" table frames that support the NFT channels.
5. Assemble all NFT channels and position on the assembled frame.
6. Assemble and install the 4" return lines from the channels to the tank.
7. Assemble and connect all 3/4" and 2" supply lines to the NFT channels and connect to the pump station.
8. Test the system and check for leaks and proper flow to each NFT channel.
9. Read and follow the care and maintenance information.

 **WARNING:** Enlist the services of an experienced electrician when connecting power to the pump and other electrical devices. All wiring to be completed according to established codes and practices.

 **DROWNING HAZARD:** Never leave the tank cover off when tank is unattended. Never allow children or others within the boundary of the pump station at any time. Always have an assistant present when completing tank cleaning and system maintenance to prevent accidents. Disconnect the pump when performing any system maintenance.

BASIC CARE AND MAINTENANCE

Daily

1. Check all 1/8" supply tubes at each channel to ensure proper flow. Clean and replace as needed.
2. Check all fittings, tubes, and pipes for leaks.
3. Check pump and filters for leaks.
4. Ensure that the by-pass and recirculation valve is set properly to allow solution to flow back into the tank.
5. Check pressure gauges to ensure a constant pressure across the filter.
6. Check PH/EC/TDS levels in the tank according to requirements for the plants that are growing.
7. Inspect all electrical connections and wires for damage or corrosion.

Weekly

1. Disassemble and clean the 111160 disc filter according to the instructions sent with the filter.
2. Inspect the inside of the tank to ensure that there is no excess plant debris.

ATTENTION: Do not check tank without an assistant present. Keep the cover tightly in place at all times. Do not allow children or others near the tank during inspections and scheduled maintenance.

Monthly

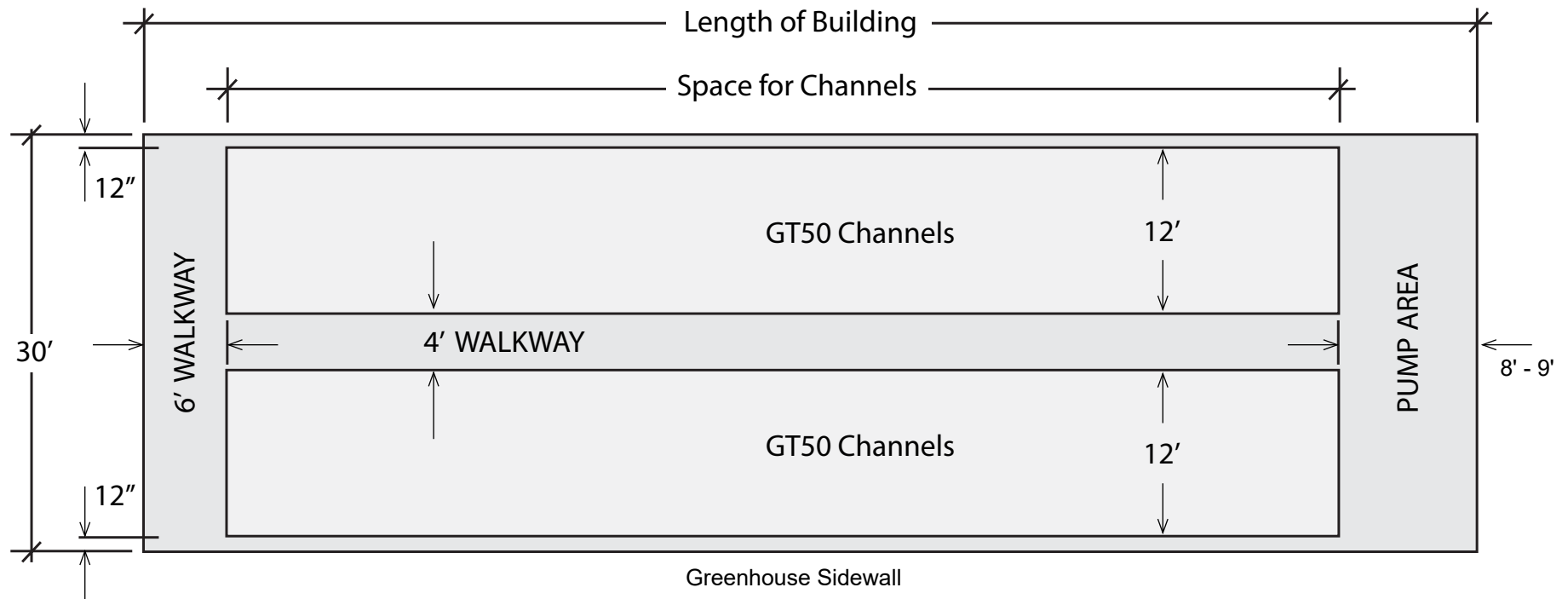
1. Clean the screens of the in-tank pump assembly. Excess plant matter can clog screens and may be an indication of distressed crops. Perform this procedure more often if needed.
2. Inspect the exterior and top of tank.
3. Keep pump station and surrounding areas free of excess debris and other materials common to a greenhouse.
4. Drain and clean the inside of the tank at least 2-4 times a year depending on conditions for best results.
5. Check drain tube and supports to ensure all are intact. Check drain tube slope to ensure proper drainage of tube.

Hydroponic System Site Plan—Sample

1

The diagram below shows the basic layout of NFT channels, work areas, and pump and tank area. Use this diagram when planning to assemble your NFT system. Review all diagrams and photos in this guide before you begin. Consult the system site plan for your commercial NFT system in the Layout and Frame section near the back of this guide before you continue. **Actual dimensions will vary.**

Sample greenhouse showing recommended system layout. Consult the Layout and Frame section near the back of this guide to view the layout details for your system.

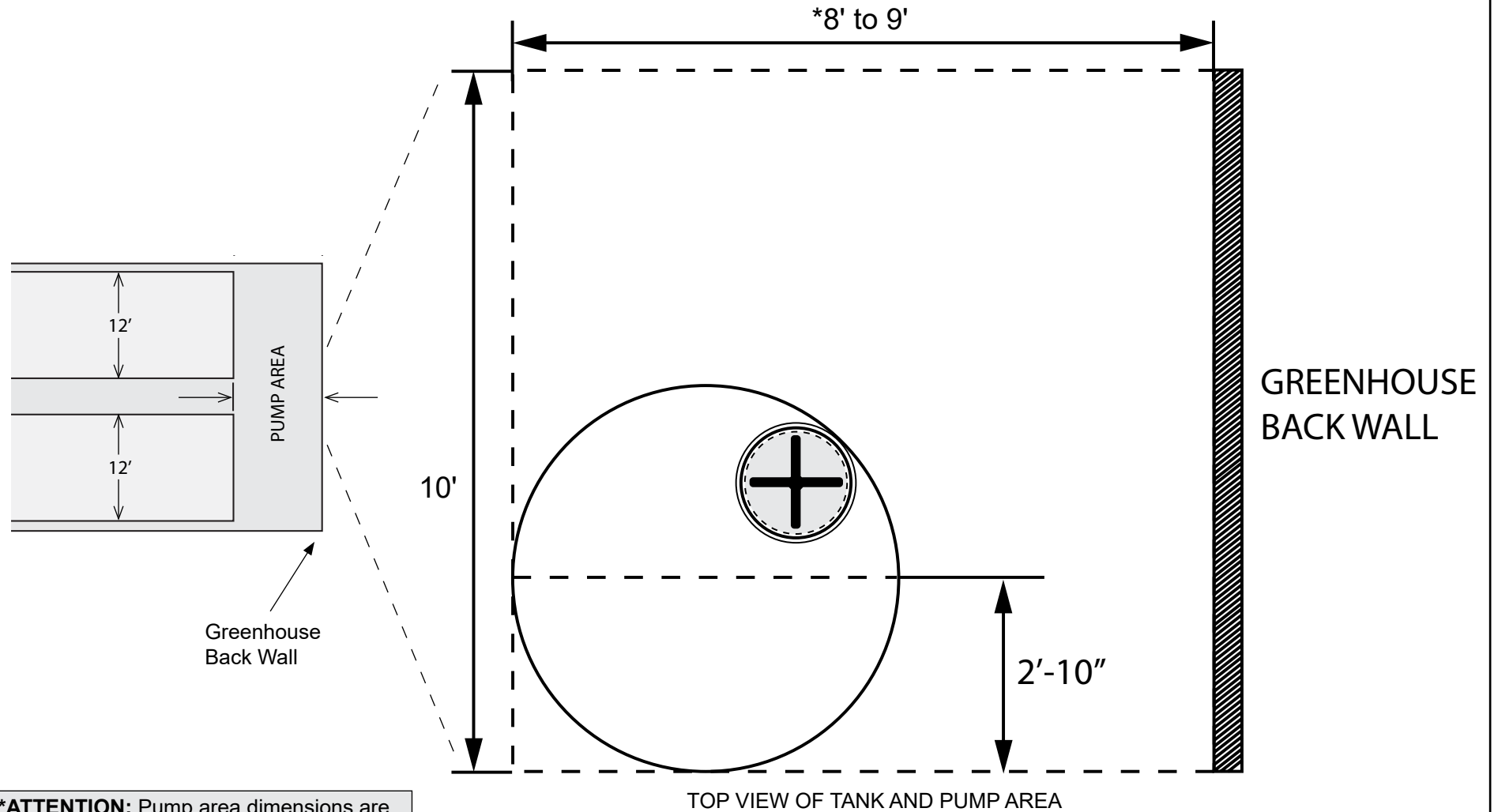


ATTENTION: Pump area dimensions are approximate. See layout diagrams near the back of this guide for additional details.

Hydroponic System Site Plan—Sample

1

The diagram below shows where to set the nutrient solution storage tank. Tank is set below grade in an approved sleeve designed to protect the sides of the tank. **This tank is not designed to be buried without the protection of a below-ground sleeve or a similar structure constructed to protect the tank.** Contact a knowledgeable contractor with experience with similar systems for additional information if needed. See photos on the next page for an example.



***ATTENTION:** Pump area dimensions are approximate. See layout diagrams near the back of this guide for additional details.

Prepare Site and Set Tank

2

Site preparation is important. Review the photos below and enlist the help of a professional contractor when setting the tank. *You must set tank inside a concrete sleeve or similar structure. Tank is not designed to be buried; it is not an underground tank.*

IMPORTANT: Before setting tank in the sleeve, ensure that sleeve is free of rocks or other debris that could puncture the tank when filled.



ATTENTION: Before setting and filling the tank, verify that drain plug at the lower side of the tank is in place and tight. *Contact customer service if plug is missing.*

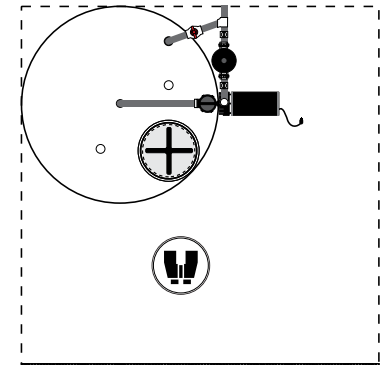
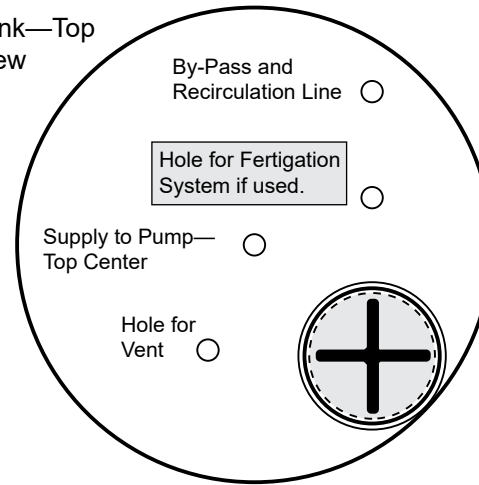
Pump and Tank Plumbing Views

3

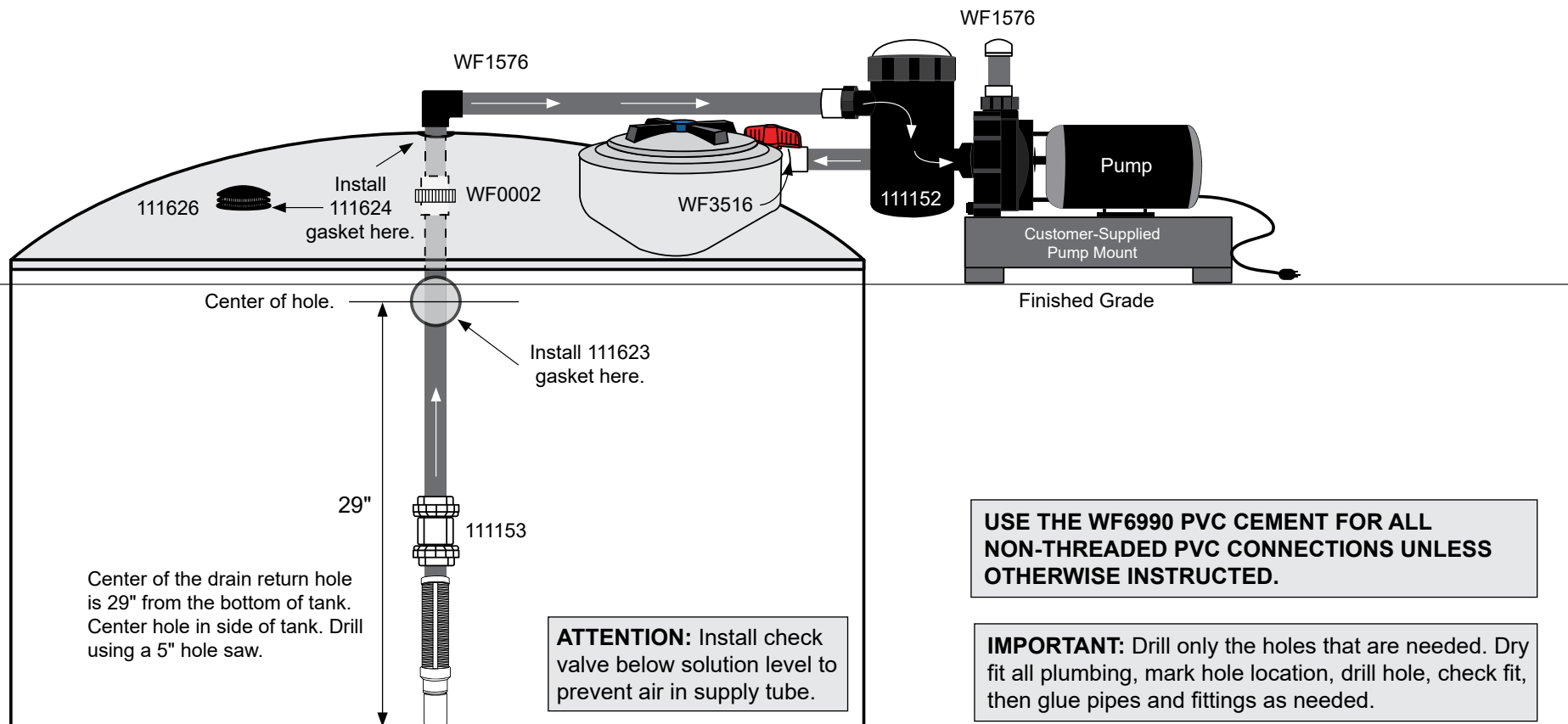
Assemble the pump station as shown. Review the following information before you begin:

- Drill all holes in the top of the tank after the tank is set and in its final position. See diagram to the right. Do not drill the fertigation hole if fertigation system is not used.
- Use a 3" hole saw to drill all holes for the 2" pvc pipe.
- Use a 5" hole saw to drill the drain return hole for the 4" pvc tube.
- Install all gaskets before you insert the pvc pipe.

Tank—Top View



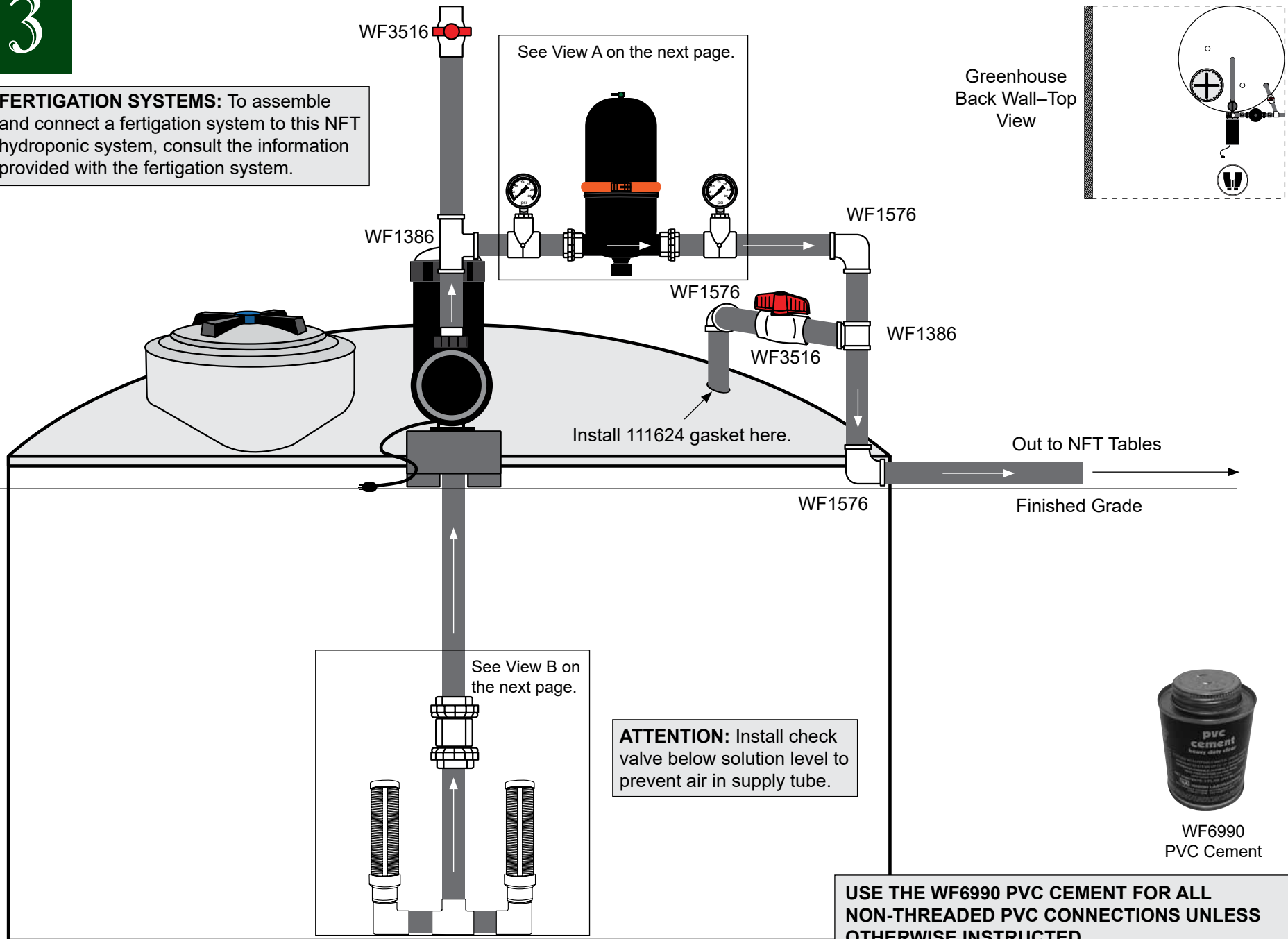
Greenhouse Back Wall—Top View



Pump and Tank Plumbing Views

3

FERTIGATION SYSTEMS: To assemble and connect a fertigation system to this NFT hydroponic system, consult the information provided with the fertigation system.

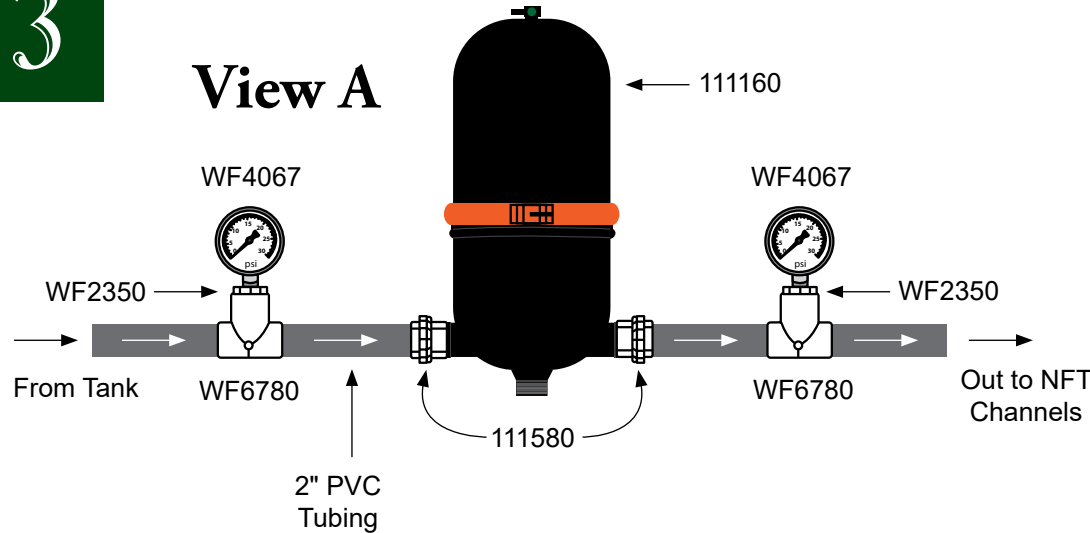


USE THE WF6990 PVC CEMENT FOR ALL NON-THREADED PVC CONNECTIONS UNLESS OTHERWISE INSTRUCTED.

Pump and Tank Plumbing Views

3

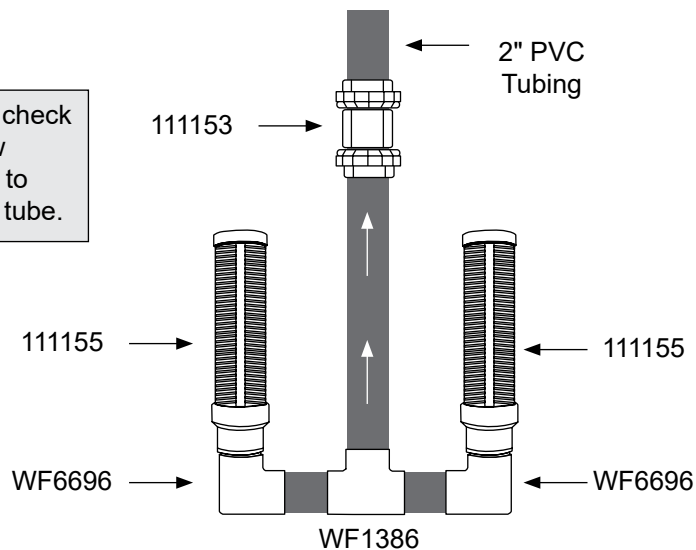
View A



NOTE: Cap the outlet of the 111160 filter. If fertigation system is used, remove cap, add a 111580 reinforced union, additional pvc fittings, and pipe as needed to connect to the fertigation system.

View B—Inside Tank Assembly

ATTENTION: Install check valve (111153) below solution level in tank to prevent air in supply tube.



ATTENTION: During assembly, wrap all fitting threads with tape before connecting the different parts. (Does not apply to fittings inside the tank.)

Install filter at a height that allows disassembly and cleaning of the filter.

Glue all pvc fittings using the WF6990 pvc glue. Apply according to the instructions included with that product. See note below for the assembly inside the tank.

During the installation of the 111160 filter, confirm water flow direction and install filter accordingly.

IMPORTANT: Do not glue the fittings for the in-tank assembly. This assembly may need disassembled and removed from the tank for maintenance.

Before assembly, measure the main access hole to determine the maximum width of the in-tank assembly.

ATTENTION: Prior to cleaning filter and to prevent damaging filter gasket, open valve on top of filter cannister to release vacuum.



WF6990
PVC Cement

USE THE WF6990 PVC CEMENT FOR ALL NON-THREADED PVC CONNECTIONS UNLESS OTHERWISE INSTRUCTED.

ASSEMBLY NOTE: These diagrams identify the recommended assembly configurations. Slight changes may be necessary due to the specifics of each individual building and related systems.

Additional fittings and pvc may be needed if changes are made to these suggested assemblies. Contact your sales representative for information and to purchase additional parts if needed.

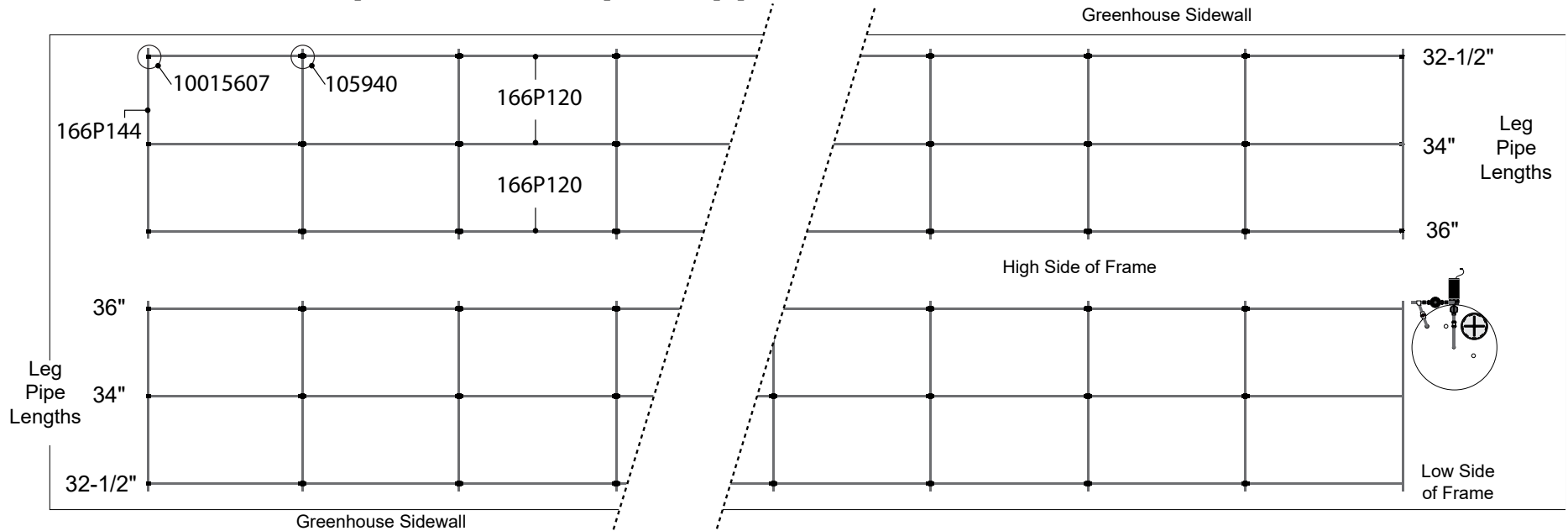
Assemble Support Frames for NFT Channels

4

ASSEMBLE THE SUPPORT FRAME

After preparing the site, assemble the support frame for the NFT channels as shown below. After assembling the support frame, use it to support the individual NFT channels during that assembly process. Assemble the frame so the low (or drain) side of the frame is toward the outside greenhouse walls. See diagram for details. **Frames differ. Before you begin frame assembly, consult the Layout and Frame section near the back of this guide to view the frame for your system.**

Top View of Sample Support Frame for NFT Channels



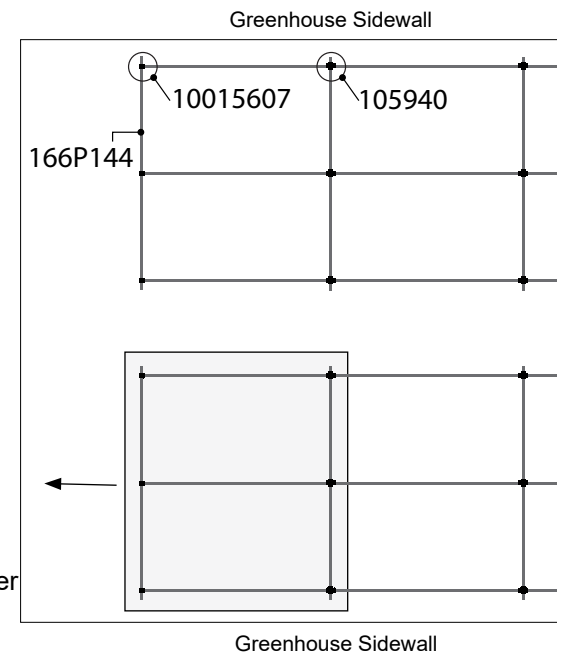
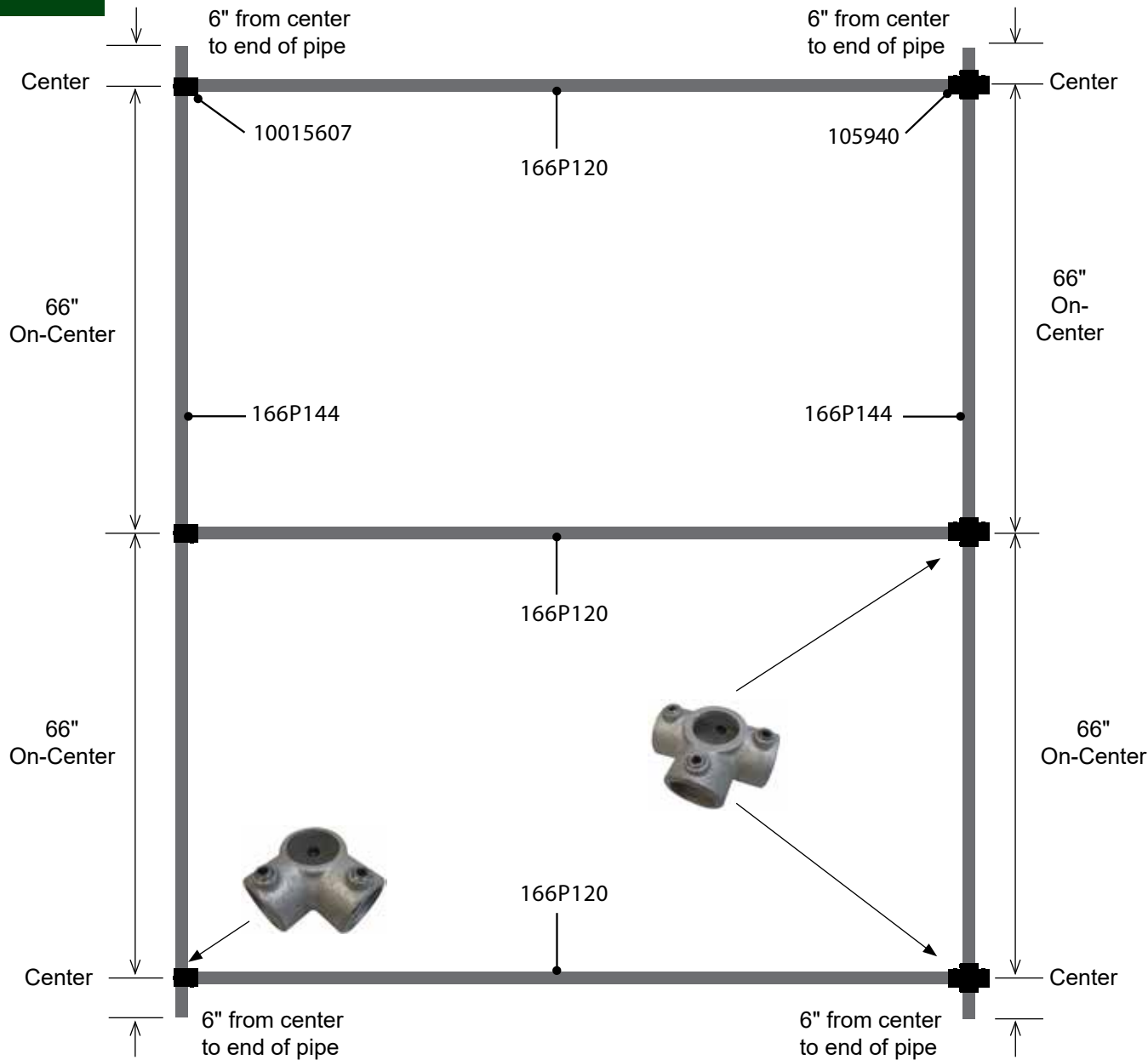
End View of Support Frame

Assemble Support Frames for NFT Channels

4

ASSEMBLE THE SUPPORT FRAME—continued

Top View of Support Frame



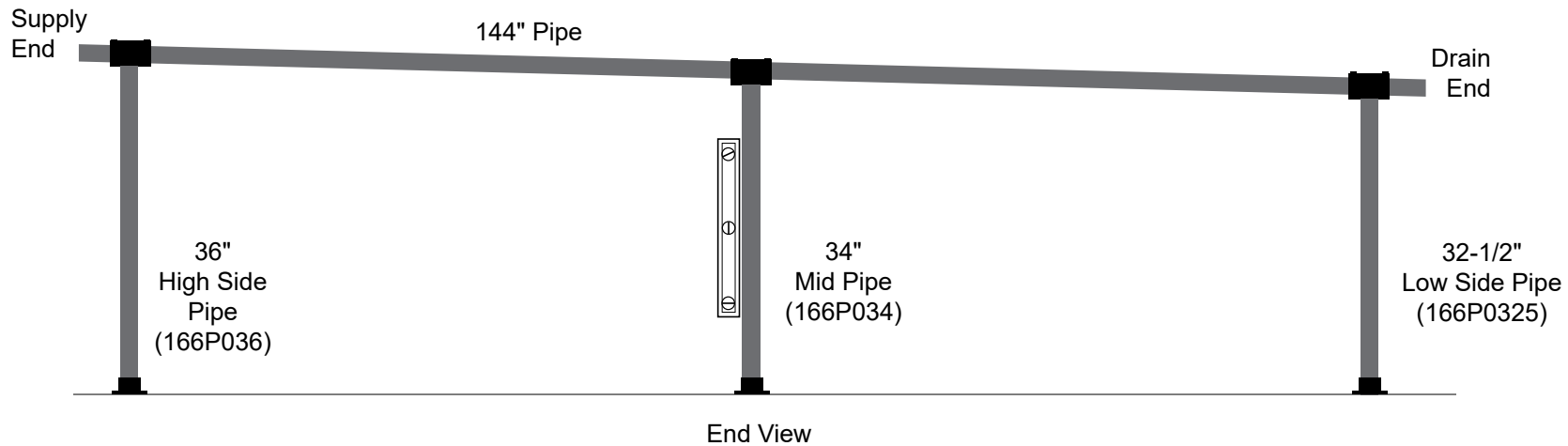
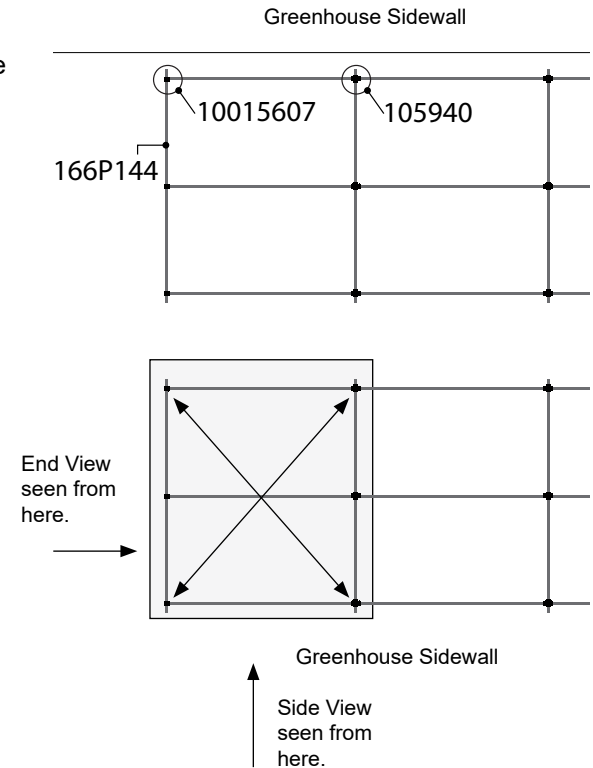
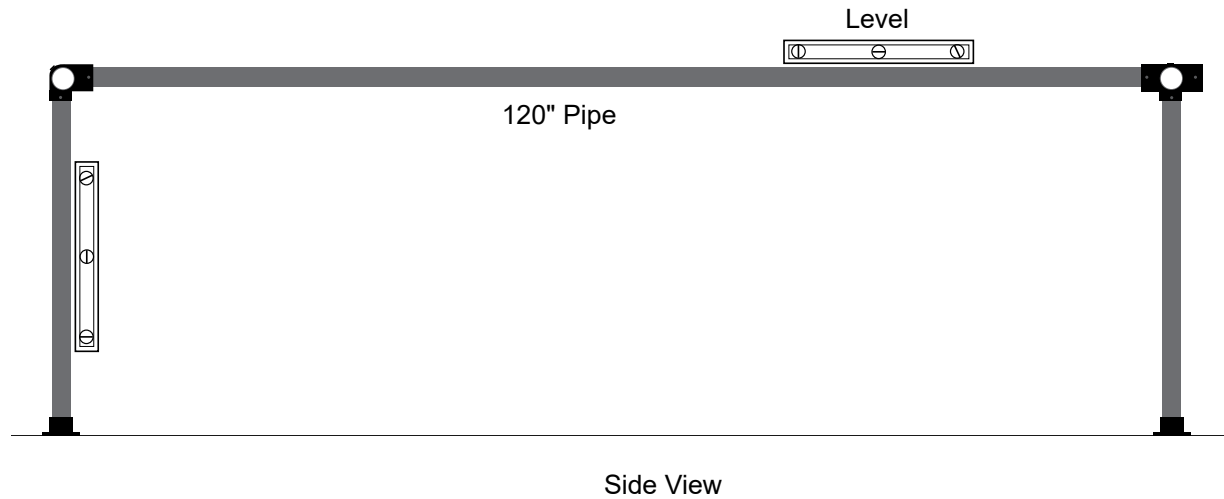
Assemble Support Frames for NFT Channels

4

ASSEMBLE THE SUPPORT FRAME—continued

Level and Square Frame

1. During frame assembly and before operation, verify that the legs are plumb and that the entire frame is level throughout its length.
2. Square each section as it is assembled. Section is square when dimensioned measured diagonally are equal. See crossed lines in the diagram to the right.



Assemble NFT Channels

5

ASSEMBLE THE 110764 12' NFT CHANNELS

ATTENTION: Attach one 110824 end cap with an outlet and one 110825 plain end cap to each 12' NFT channel.

1. Using the assembled frame as a bench, place one 12' channel (110764) on the cross supports.
2. Take the adhesive (*not included—additional purchase required*) and attach the plain end cap (no outlet—110825) to the channel end that is resting on the high side of the support frame. This is the side with the 36" legs. Be sure to coat the end of the channel with adhesive *before* you install the end cap. See photos A & B. Also, apply adhesive to the connection on the inside of the channel. See photo E. Repeat for all 12' channels.
3. At the other end of the channel, install the 110824 end cap (with outlet). Coat the end of the channel with adhesive *before* you install the end cap. See photos C & D. Also, apply adhesive to the connection on the inside of the channel. See photo E. Repeat for all 12' channels.



Apply adhesive in a well-ventilated area. Read the container information for additional precautions.

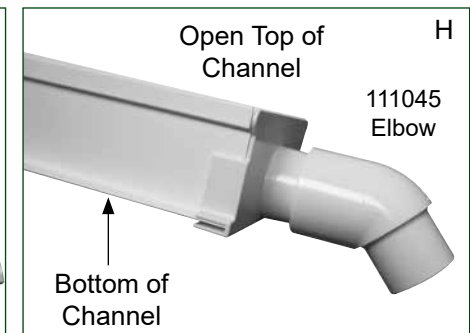
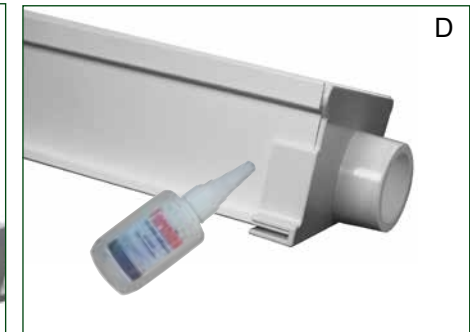
4. Carefully flip all 12' channels over so the bottom is facing up. Apply adhesive along the edges to secure and seal end caps to each 12' channel. Photo F shows an end cap with an outlet. Secure the plain end caps in the same manner.

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

5. Allow the adhesive to dry before moving the channels or testing the system.
6. Finally, apply a thin film of **WF6990** pvc cement around the end cap outlet and slide a 45° elbow (111045) onto the end cap. Install the fitting with the open end pointing down in the 6:00 o'clock position. See Photos G & H. Repeat to install all elbows.

NOTE: During the assembly, make sure the open end of the elbow is in the 6:00 o'clock position pointing down when the NFT channel is sitting on the frame—open top of the channel is up.

7. Continue by assembling and installing the 4" pvc drain tube.



Attach 112612 Drain Tube Hangers

6

ATTACH 112612 DRAIN TUBE HANGERS

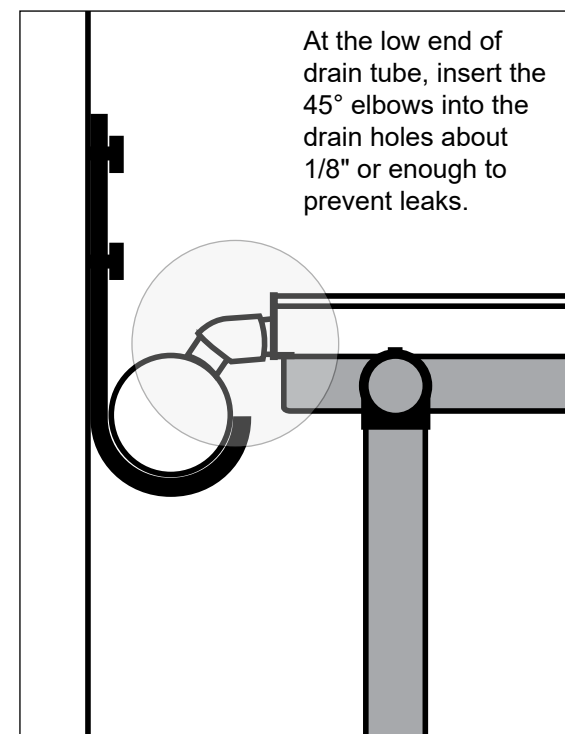
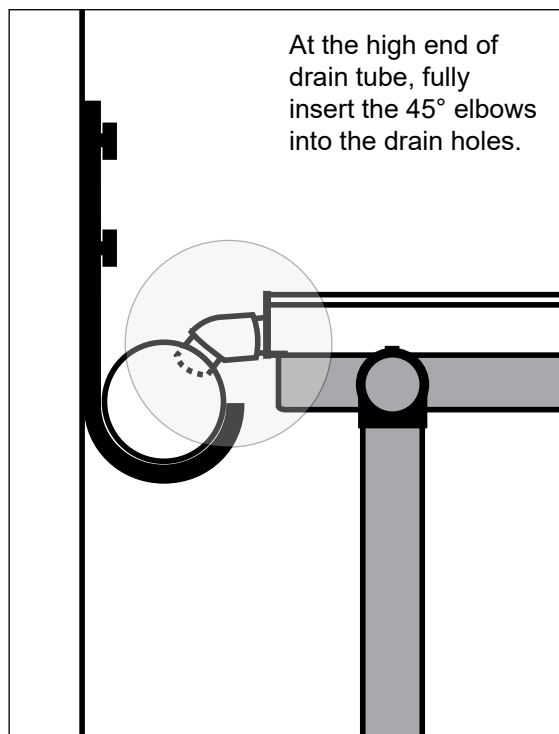
The 112612 drain tube hangers support the drain tube assembly along each bank of the NFT channels. Hangers are evenly spaced at 10' along the sidewall of the building. Read all the information in this section and all of Section 7 before you install the hangers. Refer to this section as needed when completing Section 7.

Basic installation steps:

1. Prepare the first 10' section of 4" drain tube as instructed in the next section.
2. With assistance, hold the 4" tube in place at the end of the NFT table opposite the pump station. This will become the high end of the drain tube. The 45° elbows of the NFT channels will be fully inserted into the drain tube (without lifting the NFT channel off the frame crossbar) when the tube is properly in place.
3. Next, hook the 112612 hanger on the 4" drain tube and place its mounting surface against the sidewall support or stringer board and mark the position.
4. Take the drain tube and hanger to the other end of the frame. This time, lower the 4" drain tube just enough to allow the 45° elbows to be inserted into the hole approximately 1/8" of an inch to prevent leaks. Add the hanger and mark the position on the mounting surface.
5. Stretch and snap a chalk line between the marks. Use the line as a guide to set the drain tube slope of the entire drain tube.

NOTE: Building specifics and custom NFT systems may require adjustments to this general set of steps. The main purpose of this procedure is to secure the 4" drain tube assembly and to set the slope to allow proper drainage of the NFT channels. Once the system is operating, recheck the channels at the low end of the drain tube to ensure that there are not leaks around the 45° elbows.

6. Continue with the drain tube assembly steps in Section 7.



Diagrams above show the 112612 hanger attached directly to the sidewall supports of the greenhouse. Install a stringer board between sidewall supports that are spaced greater than 10' apart, or when the position of the NFT system does not align with the sidewall supports. Space hangers no further than 10' apart. For all NFT systems, count the number of hangers provided and divide in half. Then evenly space the hanger along the sides of the building to support the 4" drain tube. As noted, maximum hanger spacing is 10' on-center.

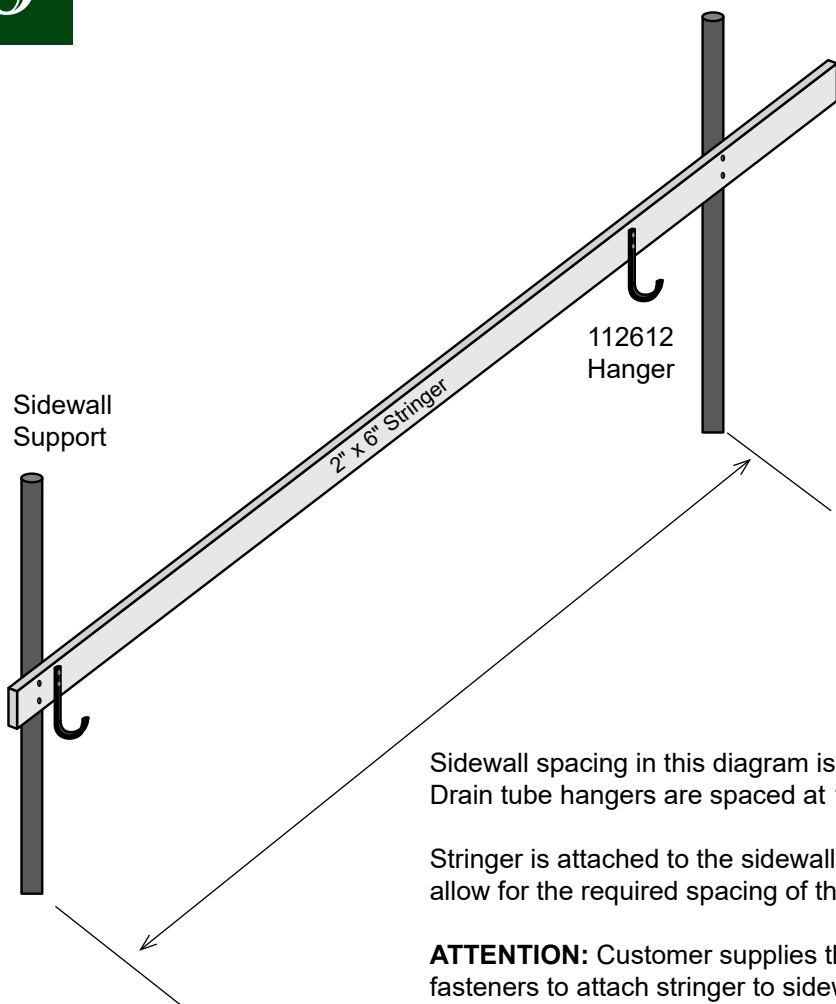
ATTENTION: All stringer material and fasteners to attach stringers to the building are supplied by the customer. Contact your sales representative for additional information if needed. Treated lumber safe for environments where food is produced is recommended. Other materials such as recycled plastic lumber can also be used.

Fasteners to attach the 112612 hangers to the stringer board are also supplied by the customer.

Attach 112612 Drain Tube Hangers

6

ATTACH 112612 DRAIN TUBE HANGERS—continued



Sidewall spacing in this diagram is 12' on-center. Drain tube hangers are spaced at 10' on-center.

Stringer is attached to the sidewall supports to allow for the required spacing of the hangers.

ATTENTION: Customer supplies the materials and fasteners to attach stringer to sidewall posts and to secure 112612 hangers to the stringer.

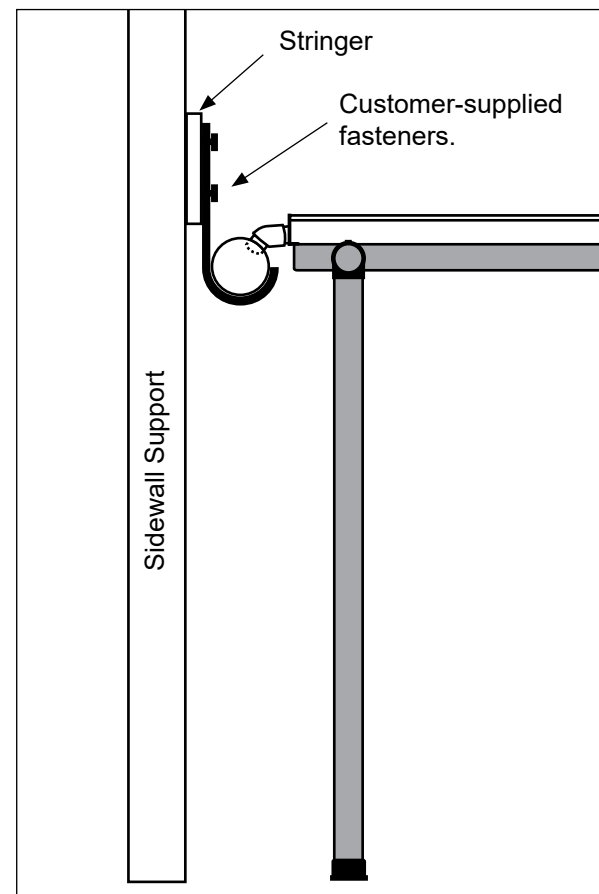


Diagram shows view of hanger and stringer as installed. Used for illustration purposes. Actual application may differ.

ATTENTION: All stringer material and fasteners to attach stringers to the building are supplied by the customer. Contact your sales representative for additional information if needed. Treated lumber safe for environments where food is produced is recommended. Other materials such as recycled plastic lumber can also be used.

Fasteners to attach the 112612 hangers to the stringer board are also supplied by the customer.

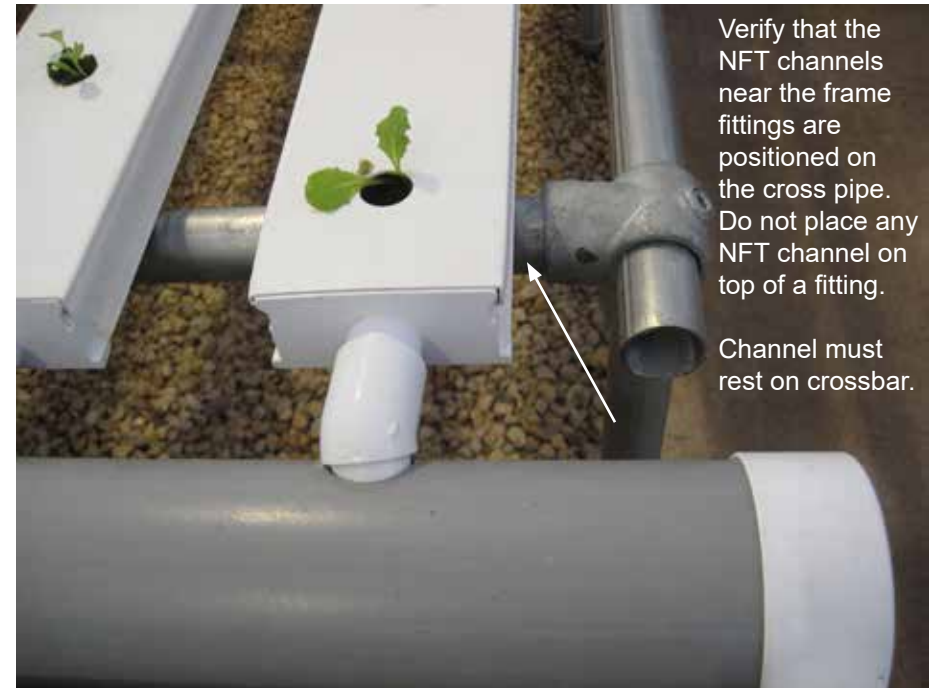
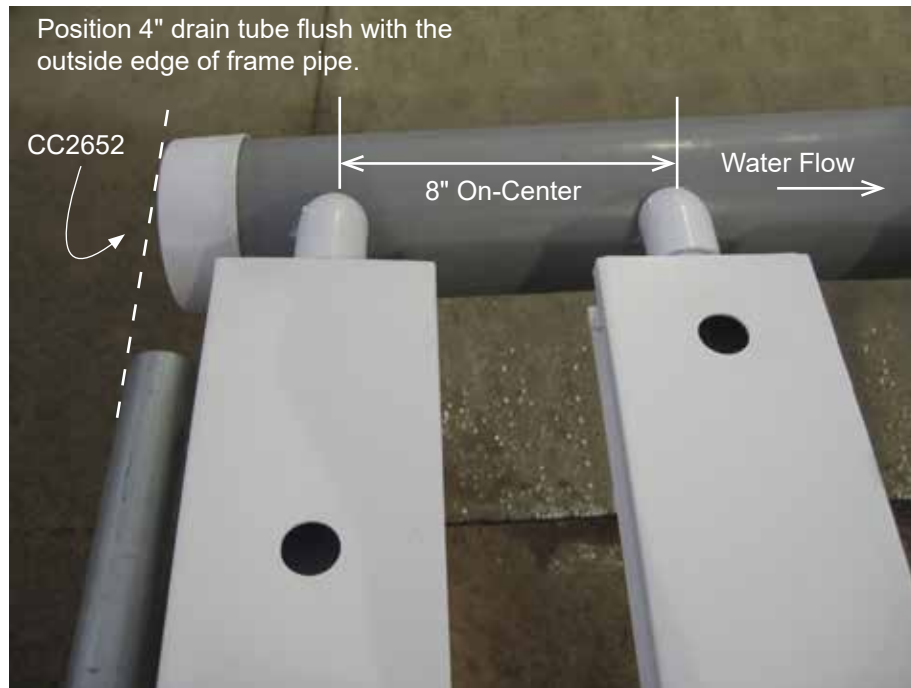
Prepare and Install 4" Drain Tube

7

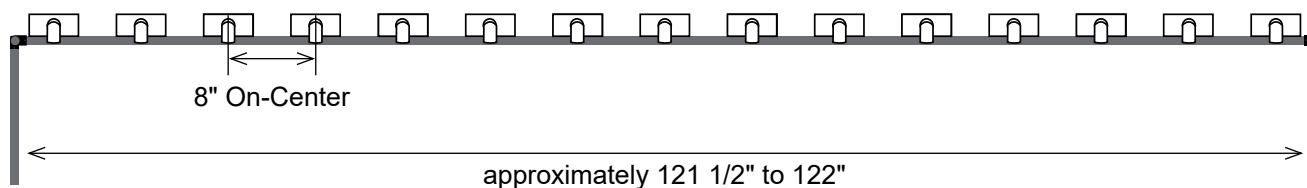
ASSEMBLE AND INSTALL 4" PVC DRAIN TUBE

A 4" drain tube runs the length of each assembled NFT support frame at the low (or drain) side of the frame. This tube directs the nutrient solution from each NFT channel back to the reservoir. Each 10' x 12' square of the frame supports 15 twelve foot NFT channels. (See diagrams below and on the next page.) Depending on length, drain tube can be fully assembled and then drilled, or each 10' section can be drilled and then attached to the next. To prepare and install this drain tube, complete the following steps.

1. Take one (1) ten foot section of the 4" drain pipe and mark drain hole positions as shown. Begin measuring at plain end of 4" tube. This is the end opposite the bell end where the next section will be connected. Plain end will be capped. With assistance, hold tube up to the first drain channel at the frame end and mark hole position. See all notes in photos below. **Variences in frame assembly will require adjustments to dimensions shown.**



2. From the first mark, continue marking hole positions 8" on-center. Holes must remain aligned throughout the length of the tube. Add the next tube to complete the first series of 15 holes. Do not glue at this time. Verify that the frame fittings do not interfere with the channel positions. **Adjust spacing as needed to achieve a uniform appearance and the best results.** Pull all channels forward to the drain tube to verify that drain elbows align with the marks on the tube. Remember: There are 15 channels for each 10' x 12' frame square. See also the diagram on the next page.



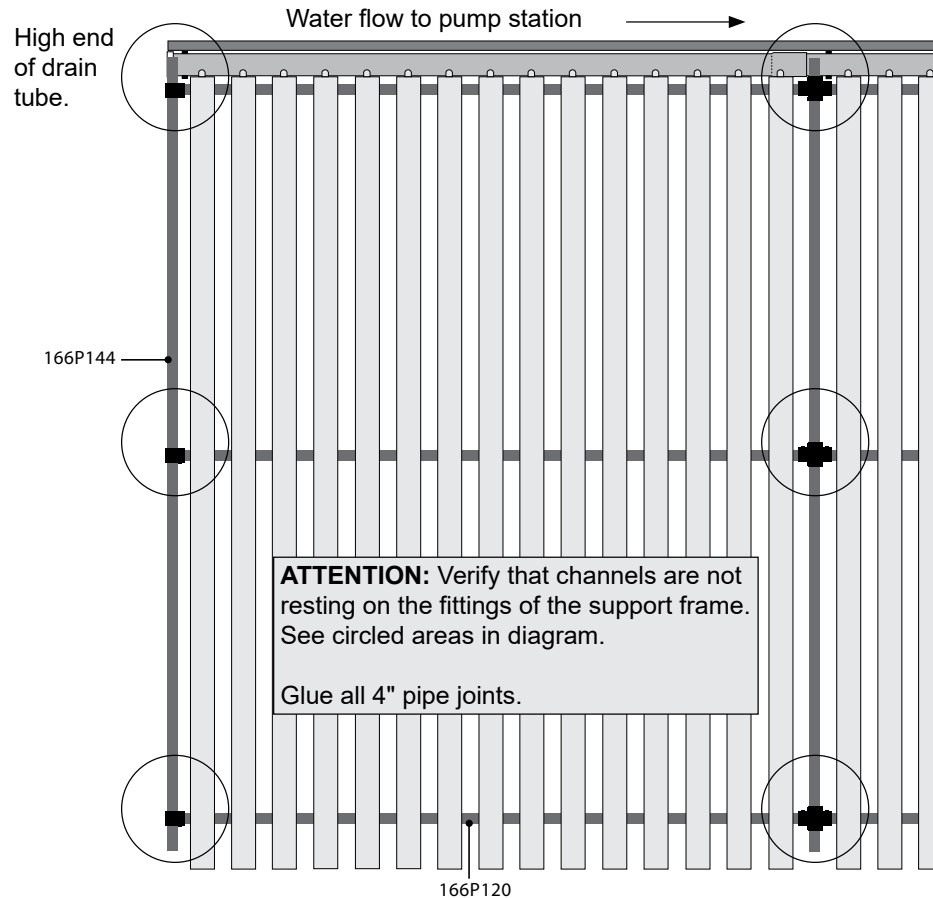
Sample 10' x 12' frame section showing the positions of the 15 channels.

Prepare and Install 4" Drain Tube

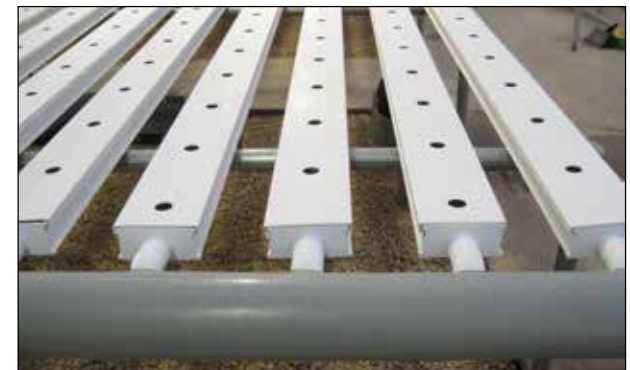
7

ASSEMBLE AND ATTACH 4" PVC DRAIN TUBE—continued

3. After all holes are marked, drill the drain holes in the tube using a 1-3/8" hole saw and a drill. Exercise caution during the drilling to prevent injuries and damage to the drain tube.
4. Once all holes are drilled, mark each pipe at the joint (so they can be realigned when glued), separate the tubes, and clean to prevent contamination of the nutrient solution when the system is fully operational.
5. Before continuing with Step 6, return to **Section 6** and complete the 112612 hanger installation steps.
6. Apply WF6990 pvc cement, realign the marks and drain holes, and connect the sections of prepared drain tube.
7. Repeat these steps to prepare, clean, and glue the remaining drain tubes. Prepare and assemble in 10' and 20' sections for easier handling. Set the assembled drain tube in place after preparation to maintain hole alignment.



Mark the 4" tube as needed. Remember to keep all marks aligned. Take an 1-3/8" hole saw and carefully drill the holes in the tube. Clean all tubes before assembly.

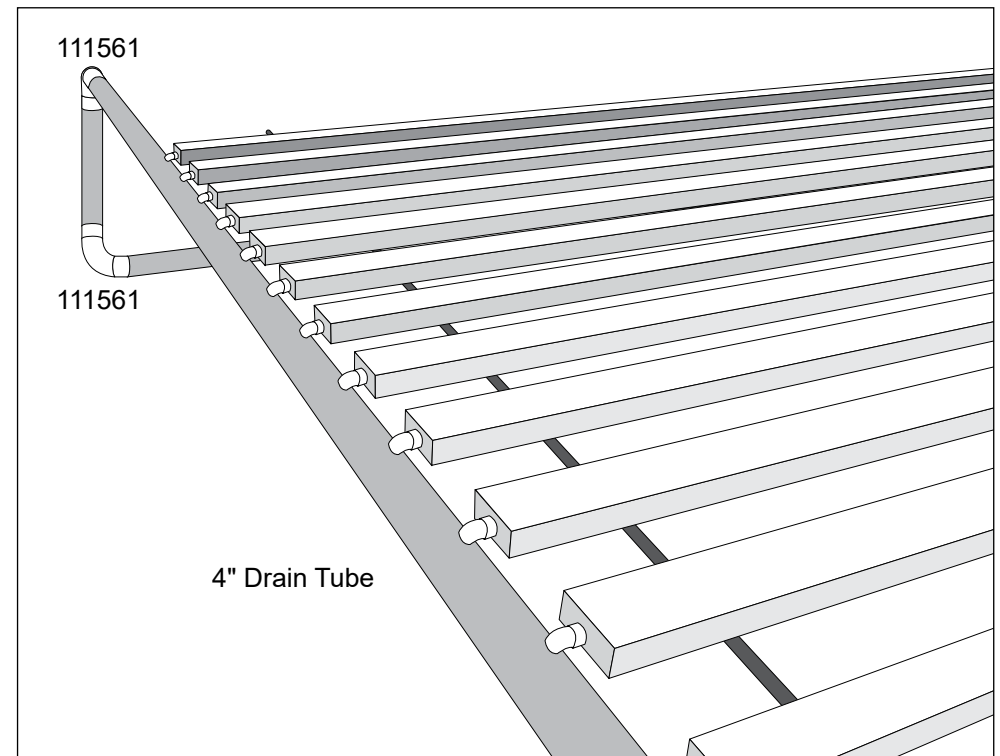
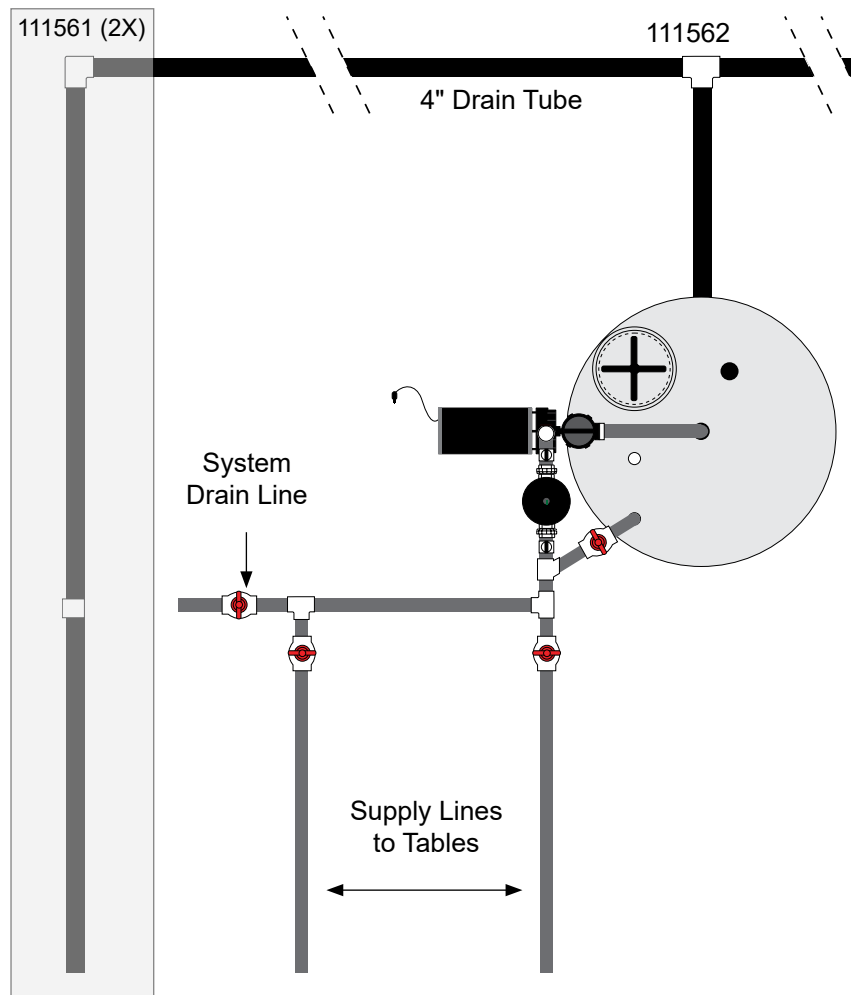


Prepare and Install 4" Drain Tube

7

ASSEMBLE AND ATTACH 4" PVC DRAIN TUBE—continued

- With the drain assembly installed and all NFT channel elbows inserted in the drain holes, check the slope of the drain tube. Tube should be tight to the underside of the 45° elbows at the high/capped end of the drain tube. At the low or outlet end of the drain tube, the 45° elbows should extend into the drain tube hole just enough to prevent water from running out of the tube. Adjust the drain tube hangers as needed to set the proper slope.
- Using the remainder of the 4" pvc tube and related fittings, assemble the final sections of drain tubing to connect the table drain tubes to the in-ground tank. See the diagram below.

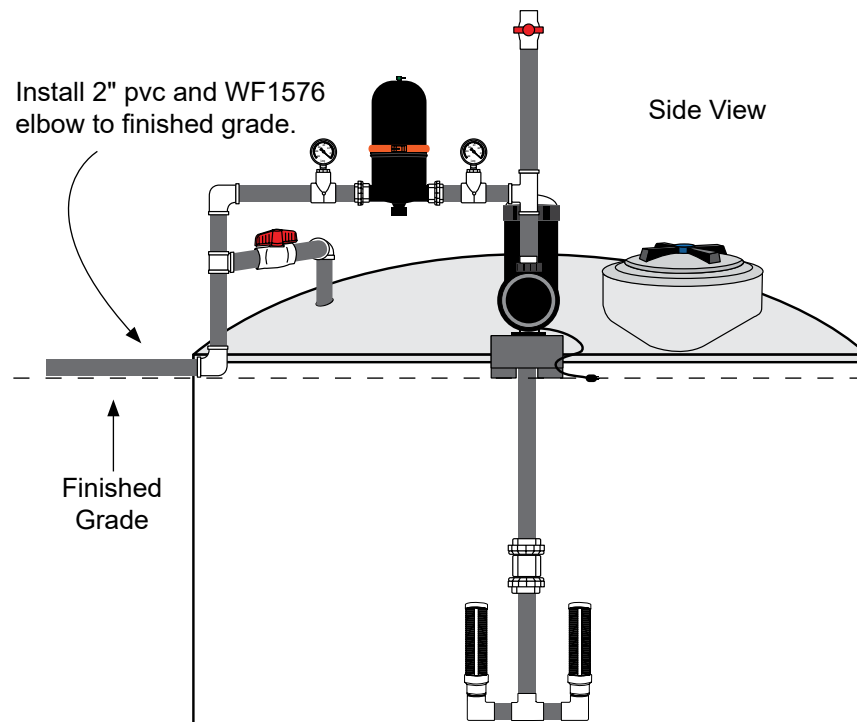
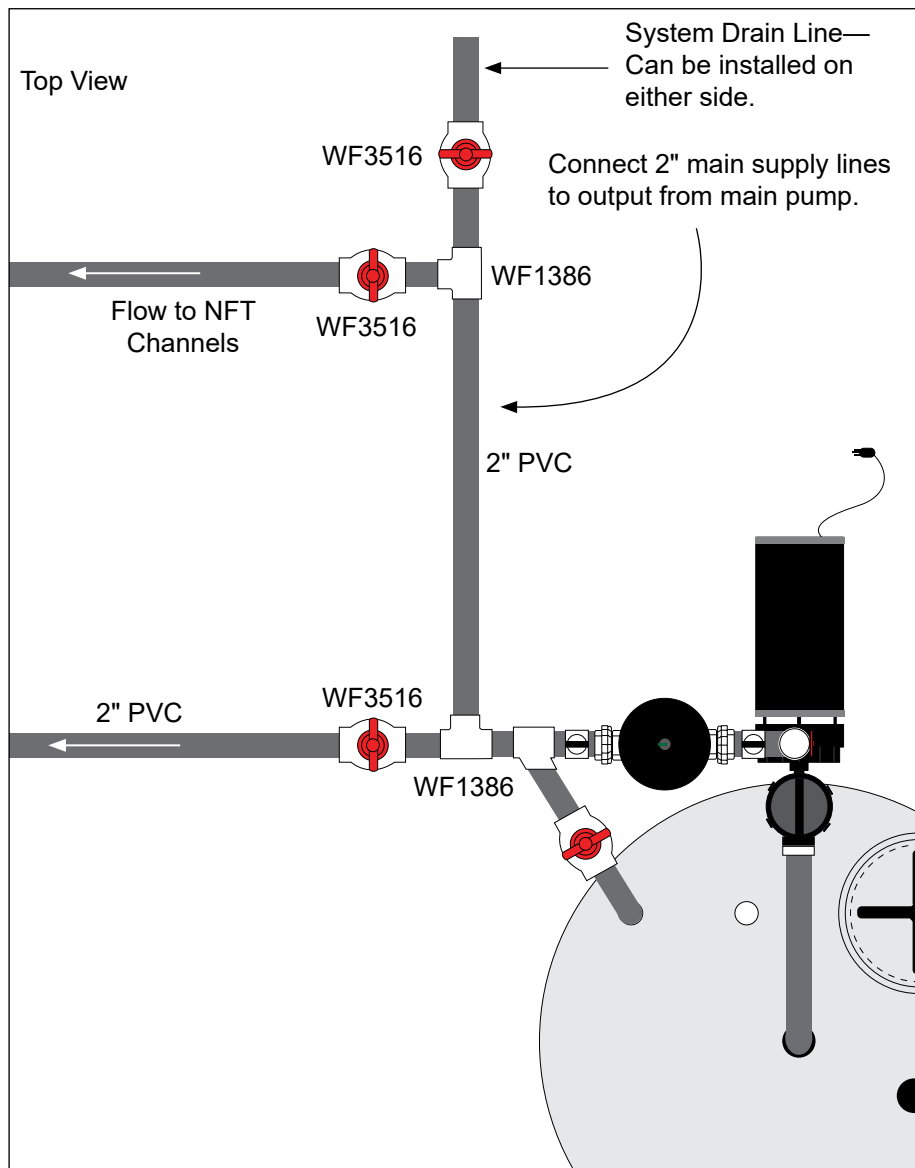


Prepare and Install Nutrient Supply Lines

8

INSTALL THE 2" NUTRIENT SUPPLY LINES

Each bank of NFT channels is feed by a main 2" pvc supply pipe. This pipe runs from the output side of the main pump, down to ground level, and along the base of the NFT frame. At each 10' frame section, a grommet and adapter are installed in the 2" supply line. A vertical 3/4" feeder tube is then attached to the adapter and runs up the frame pipe and under the NFT channels. Use the diagrams below and on the next page to assemble and attach the nutrient supply lines to each bank of NFT tables.



BASIC ASSEMBLY PROCEDURE:

1. Review the diagrams in **Sections 8, 9 & 10** before you begin.
2. Layout and connect the 2" main supply lines for each bank of tables according to the diagrams. See next page for details.
3. Drill 7/8" grommet holes in the 2" pvc supply line(s) and install the 111598 grommets and 111599 adapters. See **Section 9** for drilling and installation details.
4. Assemble and attach the 3/4" supply lines. See **Section 10** for details.

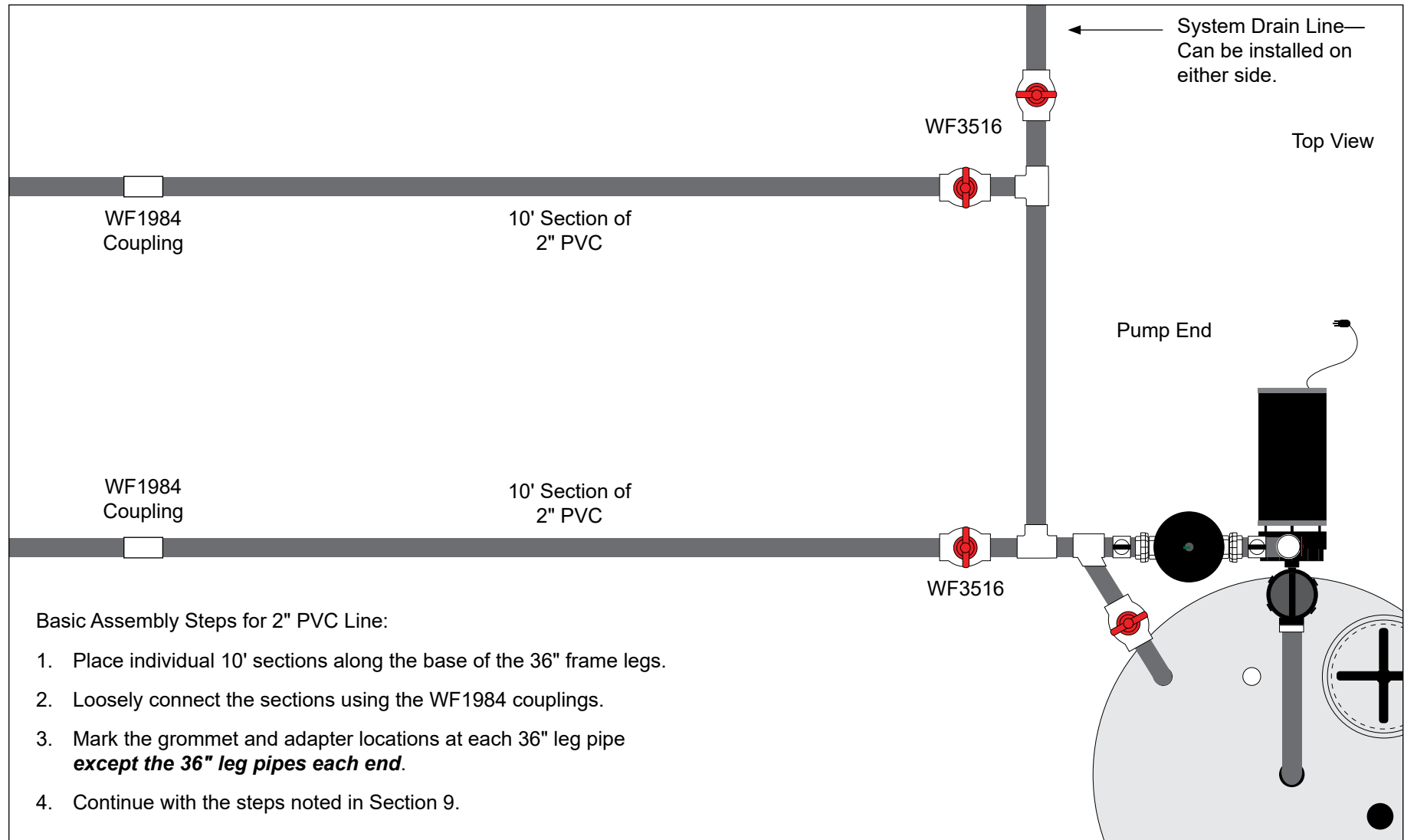
Prepare and Install Nutrient Supply Lines

8

INSTALL THE 2" NUTRIENT SUPPLY LINES—continued

The 2" supply lines run at the base of the 36" legs of the frame. This 2" pvc connects to the main plumbing of the pump. Dry fit all connections before final assembly. Install a WF3516 ball valve at the beginning (pump end—shown below) and at the end of each run. See the diagrams on the next pages for details.

ATTENTION: Do not glue at this time! Joints are glued after drilling the grommet holes and cleaning the pvc. See Procedure 9. Use the WF1984 coupling to connect the individual 10' lengths of 2" pvc tubing.



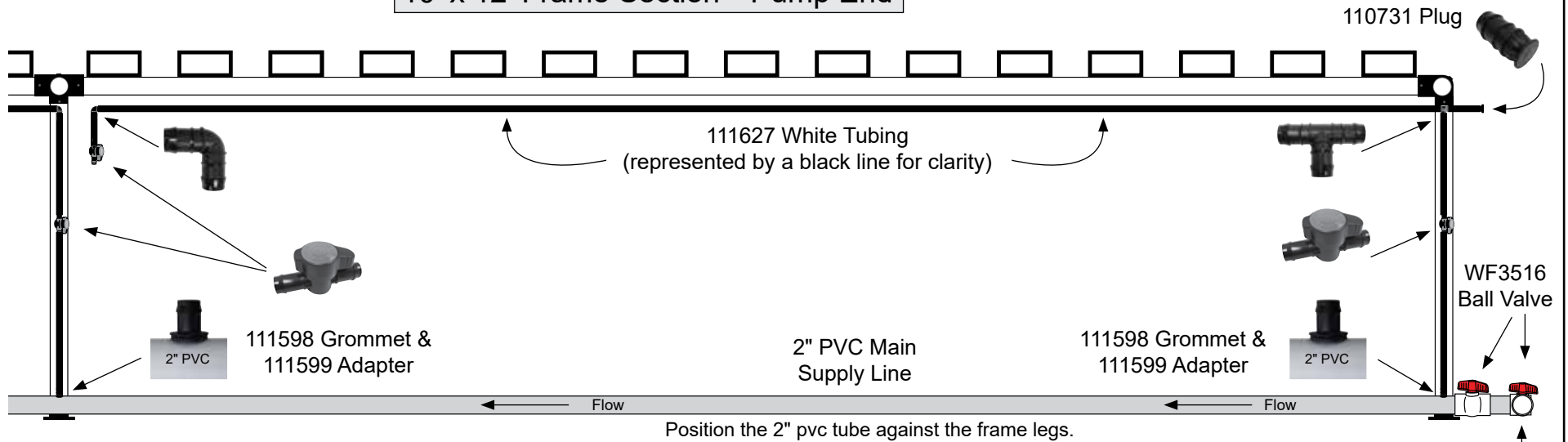
Prepare and Install Nutrient Supply Lines

8

INSTALL THE NUTRIENT SUPPLY LINES—continued

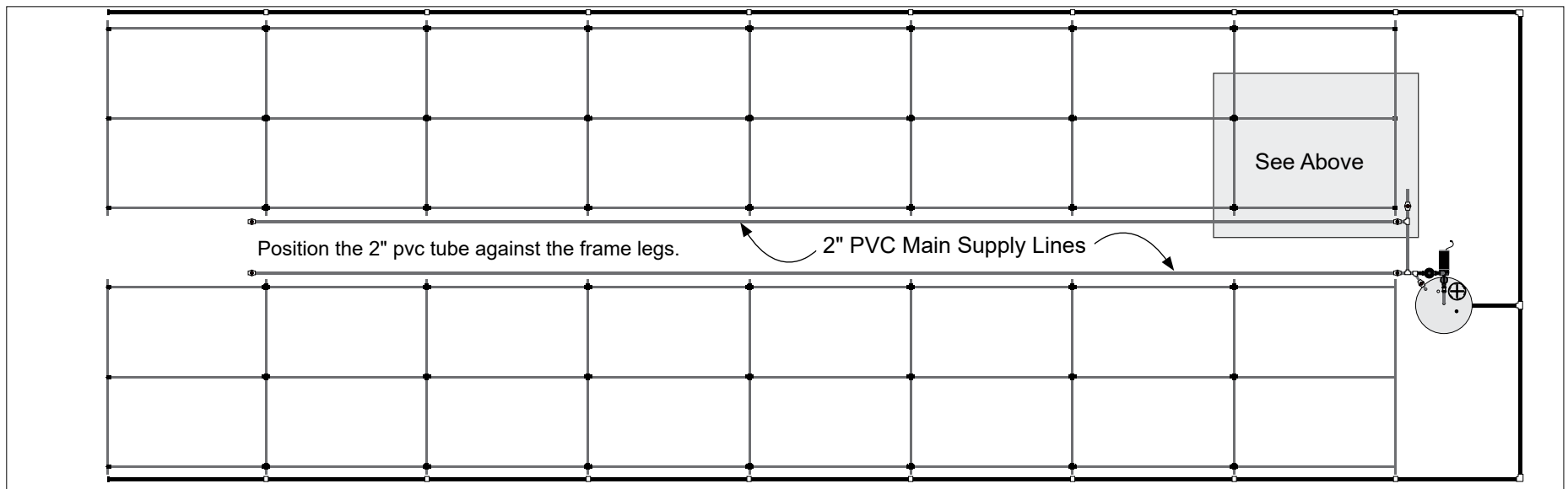
ATTENTION: Secure the 3/4" tubing to the table frame using the 112054 plastic ties. Install approximately every 16" or so.

10' x 12' Frame Section—Pump End



NOTE: During the assembly, allow enough length for the vertical 3/4" line to reach the frame fitting. This will allow the 3/4" horizontal tube to be secured to the frame using plastic ties. This line shorter in the diagram to better show the connections.

Top View



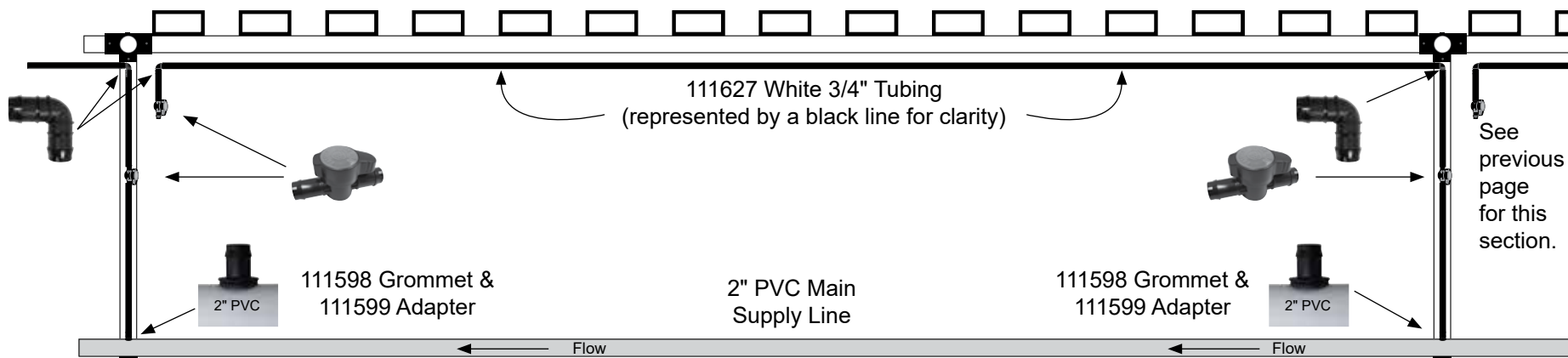
Prepare and Install Nutrient Supply Lines

8

INSTALL THE NUTRIENT SUPPLY LINES—continued

ATTENTION: Secure the 3/4" tubing to the table frame using the 112054 plastic ties. Install approximately every 16" or so.

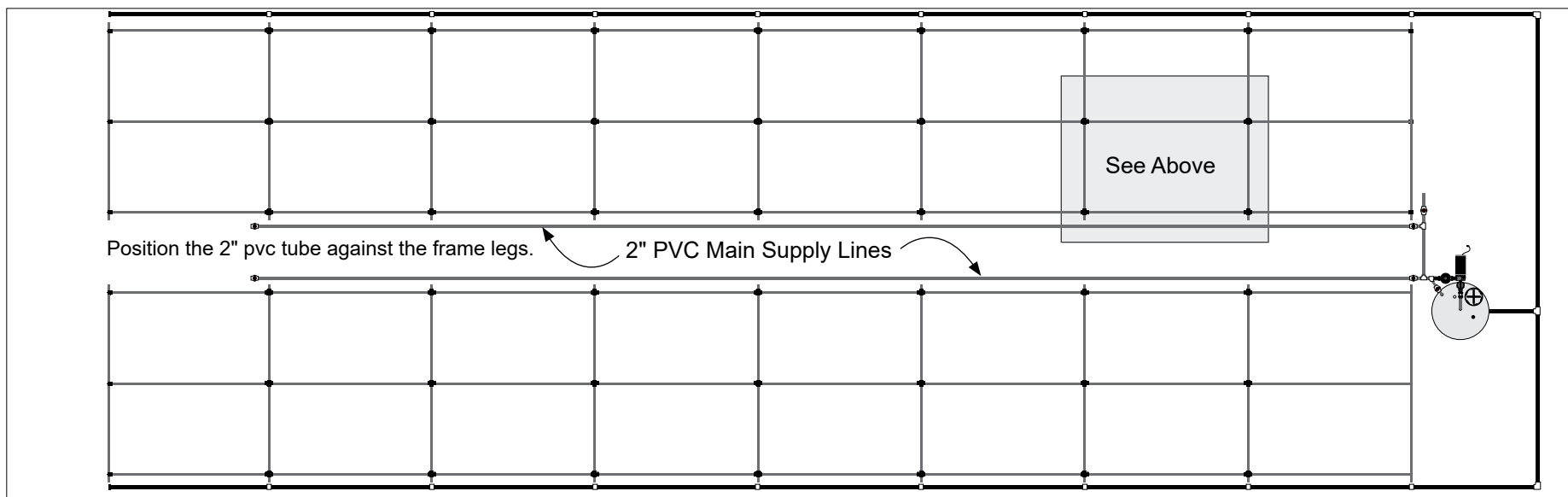
10' x 12' Frame Section—Interior next to frame section at pump end.



Position the 2" pvc tube against the frame legs.

NOTE: During the assembly, allow enough length for the vertical 3/4" line to reach the frame fitting. This will allow the 3/4" horizontal tube to be secured to the frame using plastic ties. This line shorter in the diagram to better show the connections.

Top View



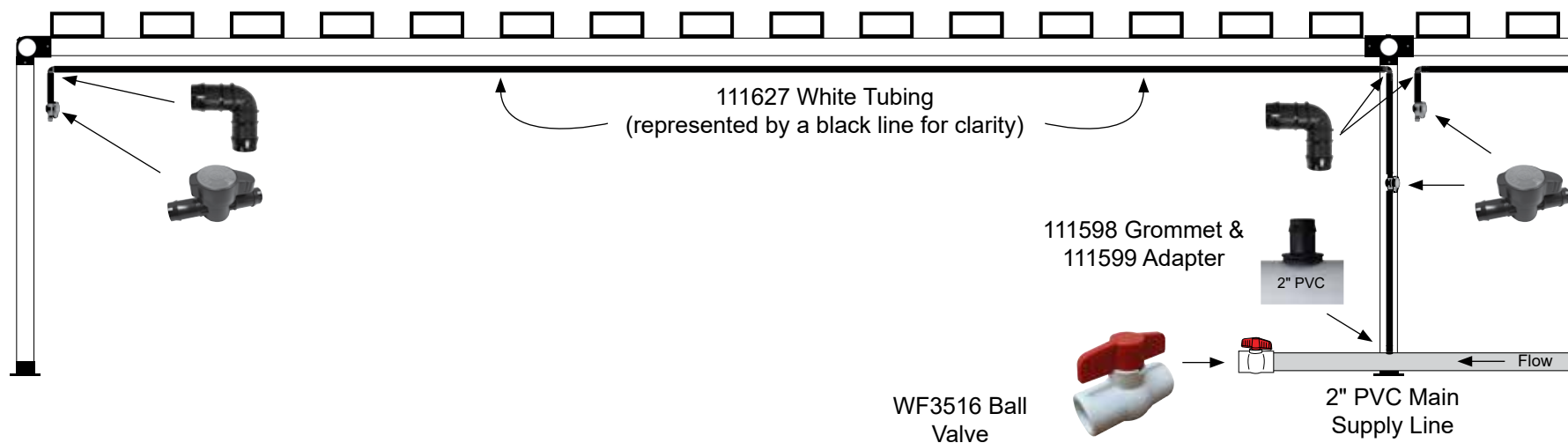
Prepare and Install Nutrient Supply Lines

8

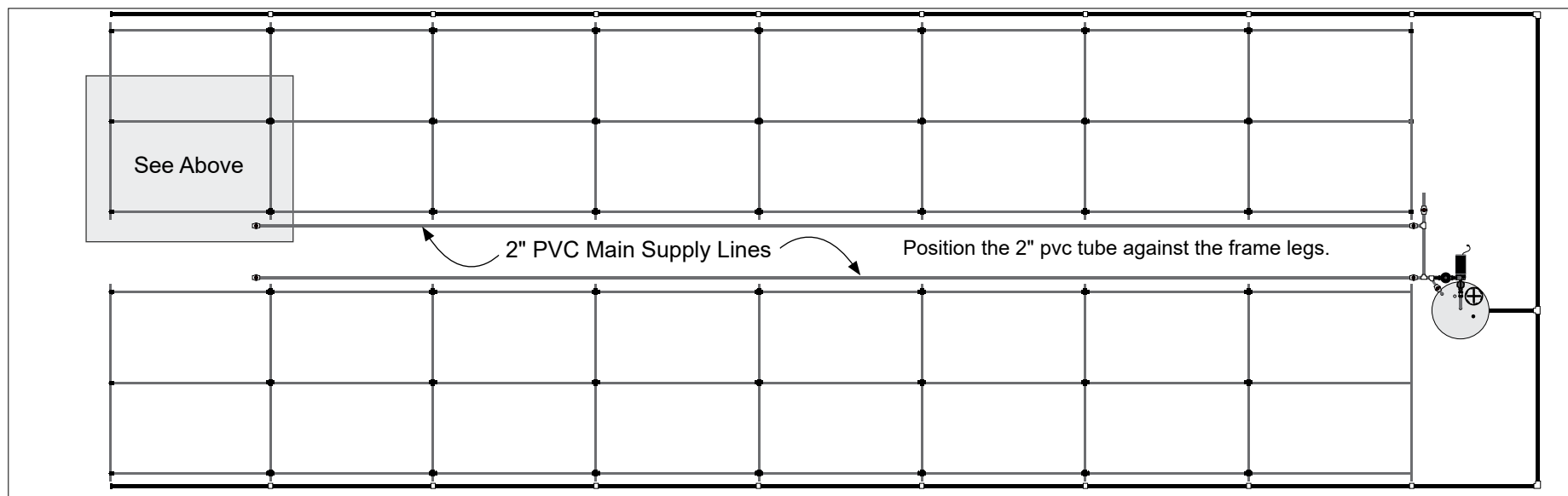
INSTALL THE NUTRIENT SUPPLY LINES—continued

ATTENTION: Secure the 3/4" tubing to the table frame using the 112054 plastic ties. Install approximately every 16" or so.

10' x 12' Frame Section—Opposite Pump End



Top View



2" Supply Line Installation Details

9

2" SUPPLY LINE INSTALLATION DETAILS—PVC

7/8" Forstner Bit—required. Additional purchase required. Use only a Forstner bit to drill this hole. Other hole saws and bits may cause the grommet and adapter to leak.

Complete these steps to install the 111598 grommets and 111599 adapters.

1. Install grommets and adapters in the 2" pvc supply line at each 36" frame leg **except those at each end of the frame**. Use the diagrams on the previous three (3) pages to determine the positions of all grommets and adapters if needed.
2. After marking the 2" tube, drill a 7/8" hole at each position using the 7/8" Forstner bit (required).
3. Disassemble the 2" supply line and clean the tube to remove the shavings.
4. Take one of the prepared sections of pvc and install a 111598 grommet in the hole.
5. Take one 111599 adapter and carefully press it into the grommet. Wet the adapter for easier installation. Use a stiff piece of flat stock if needed to press the adapter into place. Do not pound into place!
6. Repeat the steps to install grommets and adapters into the remaining holes in the 2" pvc.
7. Reassemble each run of pvc pipe. Use the WF1984 couplers and WF6990 cement to secure the joints.
8. Continue with the installation of the 3/4" supply lines, fittings, and valves.



3/4" Tube Installation Details

10

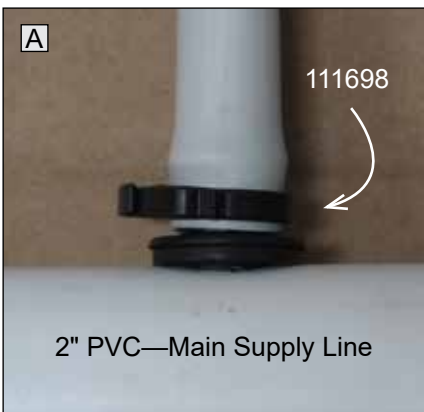
3/4" TUBE INSTALLATION DETAILS

Required parts and tools:

- 111627 3/4" White PE Tubing
- 111698 Ratchet Clamps
- AC2804 In-Line Valves
- 110729 3/4" Elbow
- 110730 3/4" Tee
- 110731 3/4" Plug
- Pipe & Tube Cutter (included)
- Large Adjustable Pliers



Use a pair of pliers to gently lock the clamp in place.



3/4" hose connected to 111598 grommet and 111599 adapter. Install at each 36" leg between the end legs of the frame.



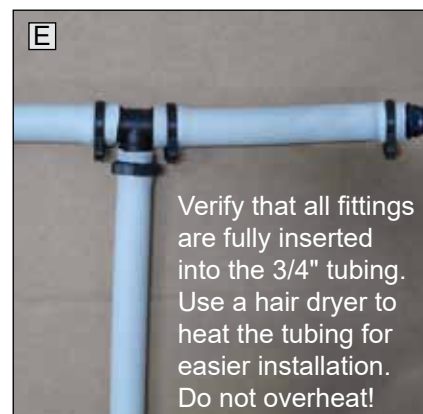
3/4" hose connected to AC2804 in-line valve. Install one valve in each riser. Make sure the 111698 clamps do not interfere with valve operation.



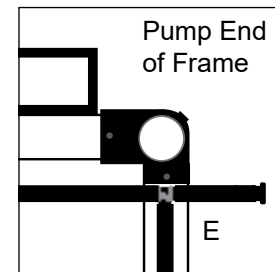
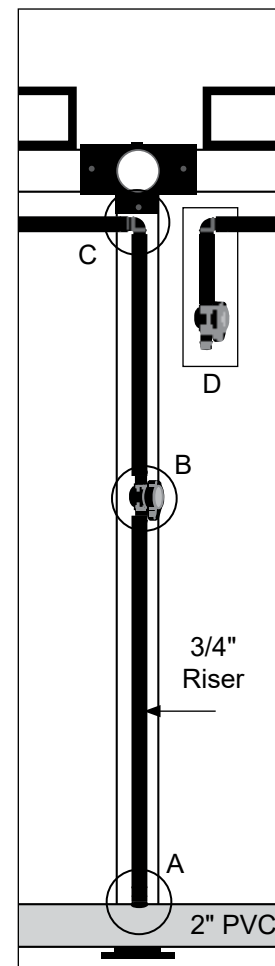
3/4" hose connected to 110729 elbow. Install at the top of each riser except at pump end.



3/4" hose connected to AC2804 in-line valve. Install at the end of each horizontal supply line.



3/4" hose connected to 110730 tee fitting. Install at top of riser at pump end only. Cap with 110731 plug.



Locate tee fittings and plugs at the frame end legs—pump end only.

1/8" Supply Tube Installation Details

11

1/8" SUPPLY TUBE INSTALLATION DETAILS

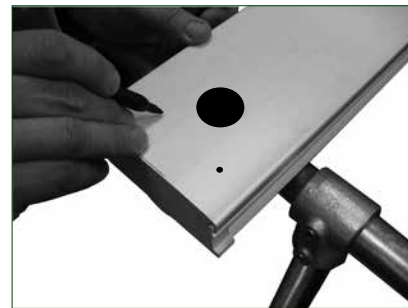
Required parts and tools:

- 110408 UV White Micro Tubing
- 111044 5mm Tee
- 110743 Punch
- Drill and 3/16" Drill Bit
- Tape Measure and Marker

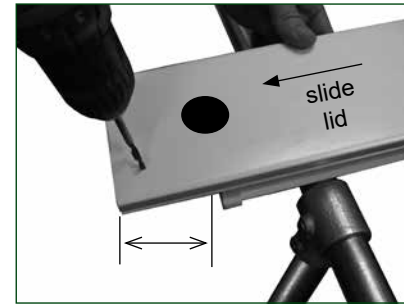


1. Set lids on channels so holes are staggered.

NOTE: Be sure to drill the 3/16" holes at the correct end of each lid to maintain staggered hole pattern.



2. Mark hole locations for the 1/8" supply tubes. Space holes approximately 2-1/2" to 3" apart so hoses are near the edge of the channel.



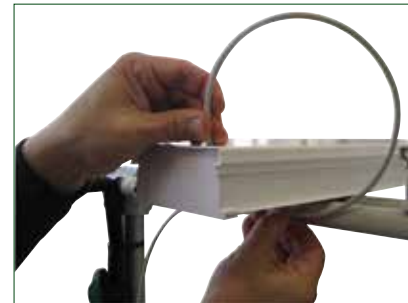
3. To prevent shavings from dropping into the channel, slide lid out over the end of the channel (or set lid off to the side) and drill two 3/16" holes in the lid.



4. Remove debris and slide lid into position on channel. Slide channel to expose the 3/4" white supply line. Take the 110743 3mm punch and punch a hole in the 3/4" line at each channel position.



5. Verify that channels and holes remain aligned as holes are punched.
6. Slide one channel back into position and place the drain elbow in the drain hole of the 4" drain tube to lock channel in place.



7. Cut a 12" supply tube from the 110408 poly tubing and verify that the tube is the desired length.
8. Cut another tube to match the first. *Approximately 2' of tubing is provided for each NFT channel.*



9. Take one 111044 tee fitting and gently twist a hose onto each threaded end of the fitting.

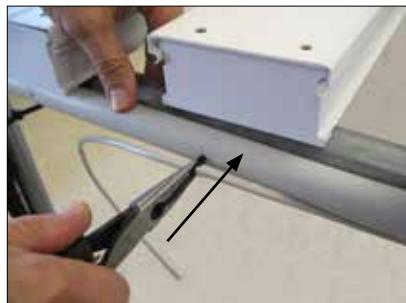


10. Gently grip the center portion of the hose and fitting assembly with a clean set of pliers.

1/8" Supply Tube Installation Details

11

1/8" SUPPLY TUBE INSTALLATION DETAILS—continued



11. Press the barb end into the hole of the 3/4" supply tube.



12. Once the tee is firmly installed, *gently* pull back on the tee to seat it in the hole. **Do not pull the barb out of the 3/4" tube!**



13. Take the free end of each 1/8" tube and cut it at an angle to easily slide tube into the lid.



NOTE: Use a pair of side cutters (shown) or plastic pipe and tube cutter included with this system.



14. Slide the tubes into the channel lid to check final fit.



15. Repeat the steps to cut tubing for the remaining channels and assemble according to the previous steps.

16. After installing all 1/8" supply tubes, verify that all channels are in position on the frame with the drain elbows inserted in the 4" drain tube.



Install Table Frame End Caps

12

INSTALL TABLE FRAME END CAPS—WF6715

The WF6715 end caps are provided to cap the open ends of all frame pipe. These caps help to prevent injury when working around the NFT system. Additionally, the end caps keep insects out of the open pipes. After the entire system is assembled, return to all open pipes and slide a cap into position.



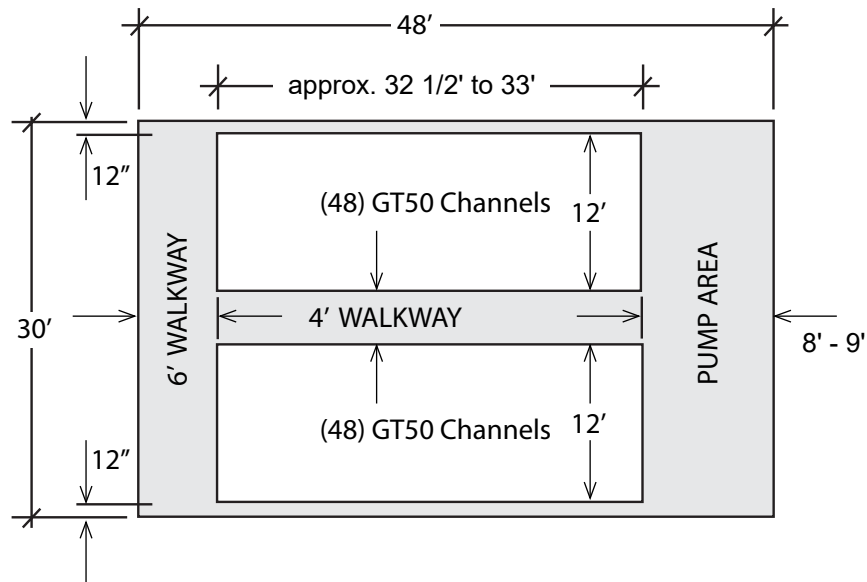
WF6715
End Cap—Frame



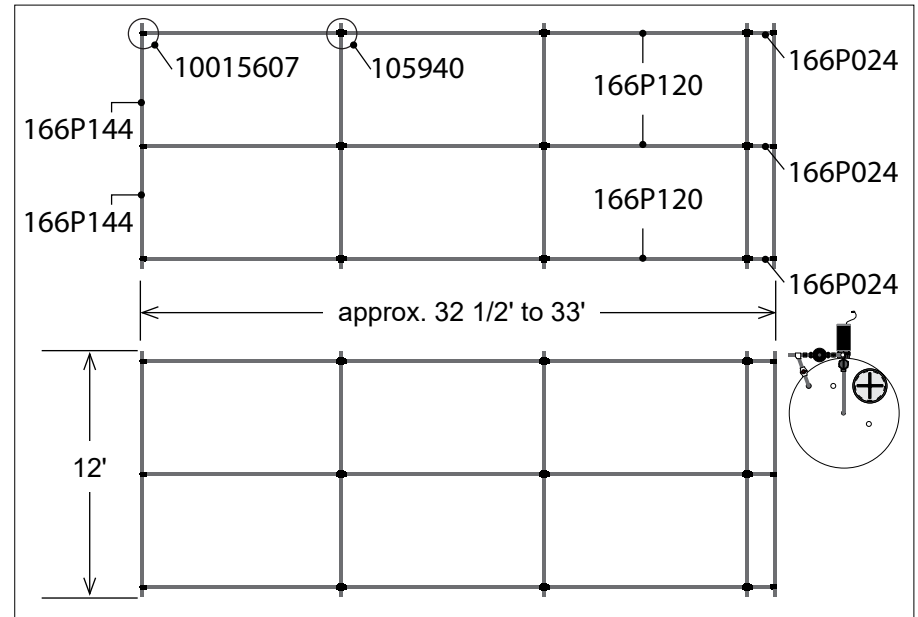
Layout and Frame Section—112615

112615: Commercial NFT System (30' x 48' Greenhouse)

Use the diagrams on this page to layout and assemble the support frame for the NFT channels.



NFT System Layout Diagram



Support Frame for NFT Channels

***ATTENTION:** Length of assembled NFT support frame (above) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.

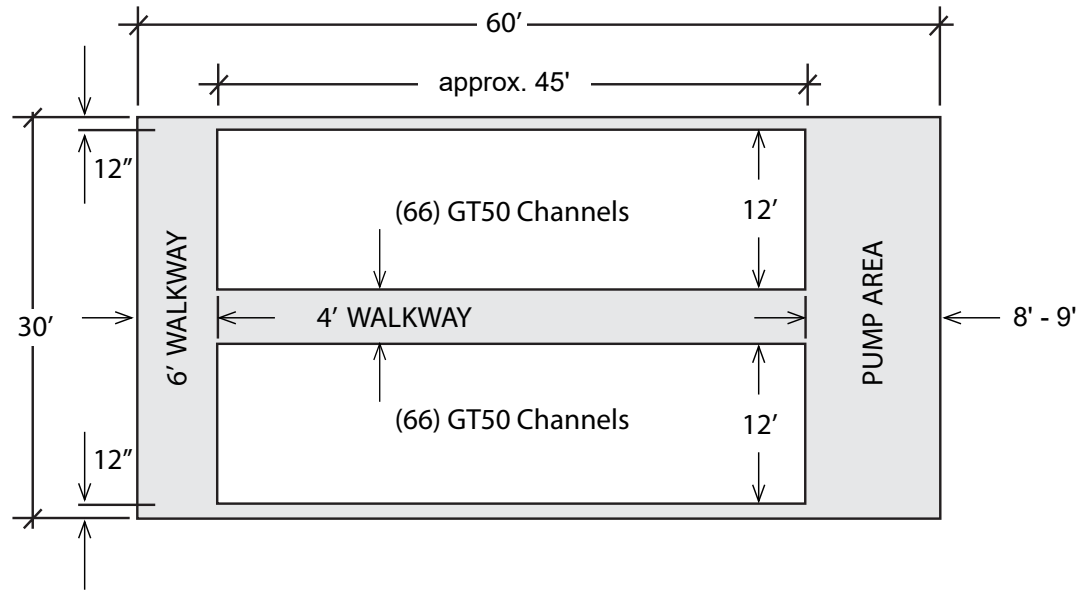
Layout and Frame Section—112616

112616: Commercial NFT System (30' x 60' Greenhouse)

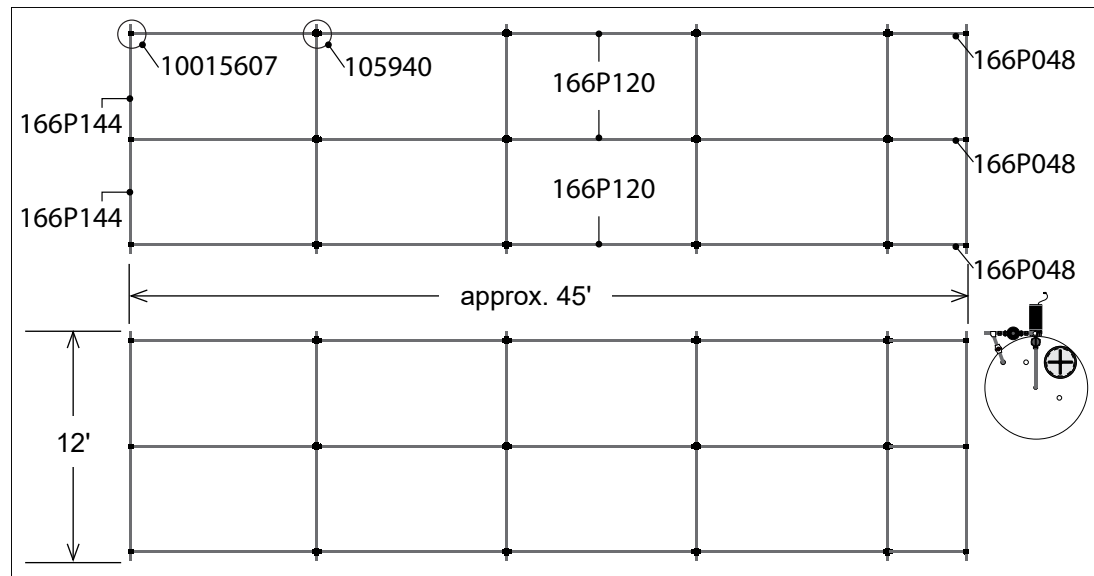
Use the diagrams on this page to layout and assemble the support frame for the NFT channels.

***ATTENTION:** Length of assembled NFT support frame (below) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.

NFT System Layout Diagram



Support Frame for NFT Channels



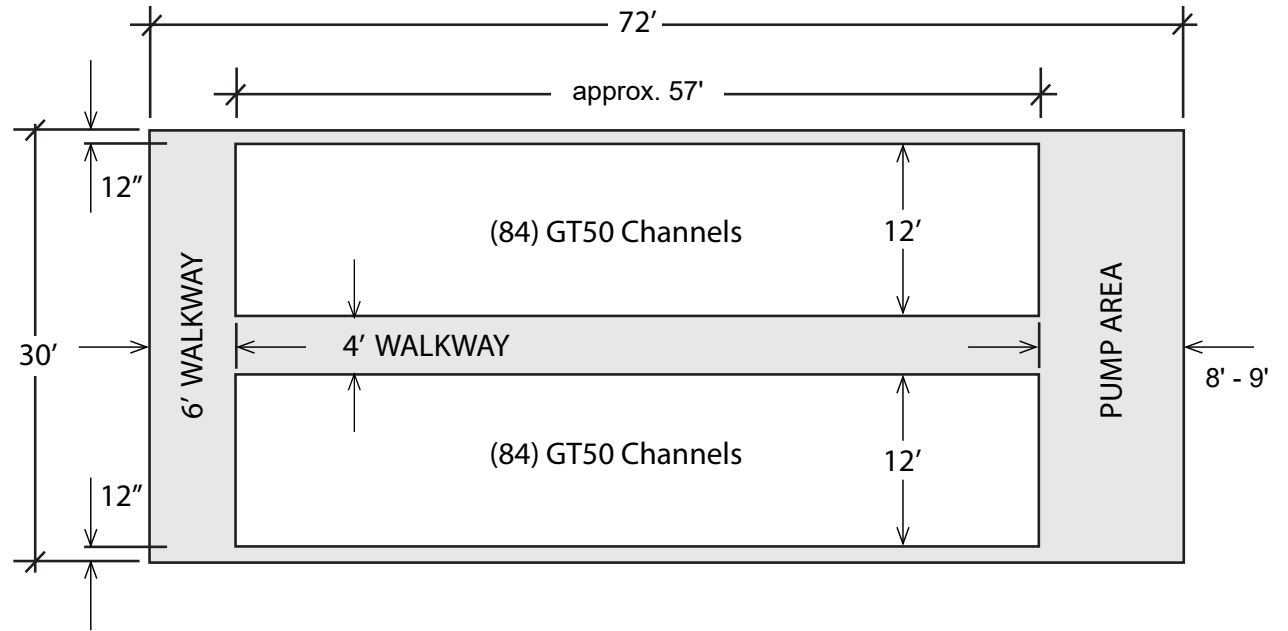
Layout and Frame Section—112617

112617: Commercial NFT System (30' x 72' Greenhouse)

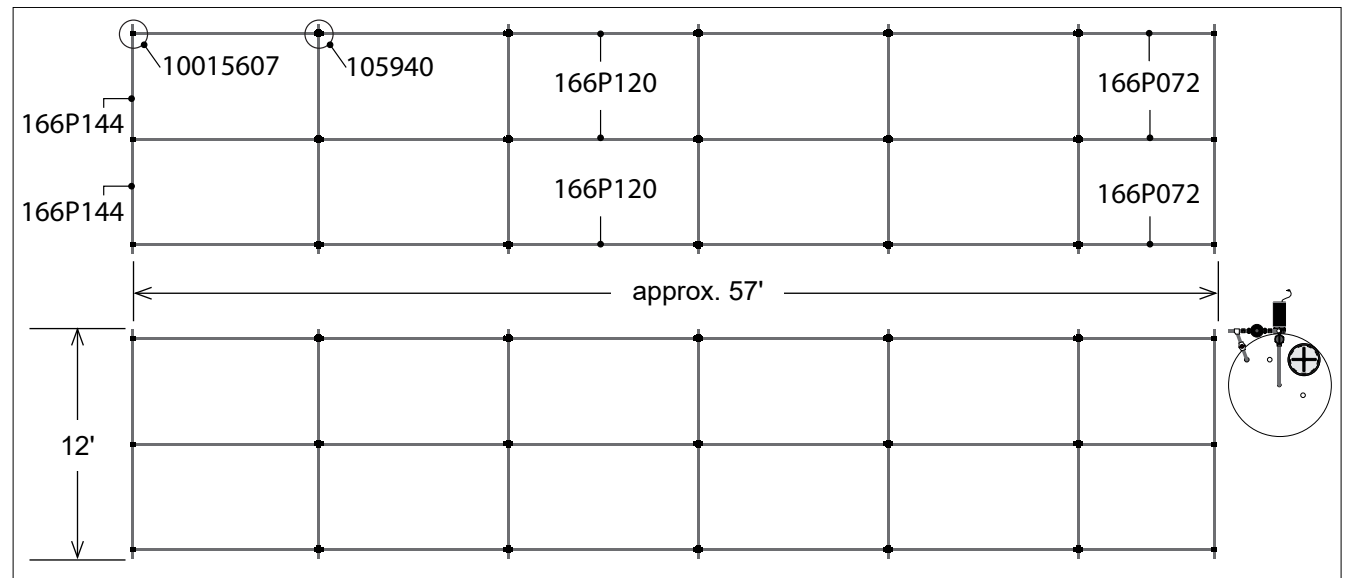
Use the diagrams on this page to layout and assemble the support frame for the NFT channels.

***ATTENTION:** Length of assembled NFT support frame (below) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.

NFT System Layout Diagram



Support Frame for NFT Channels



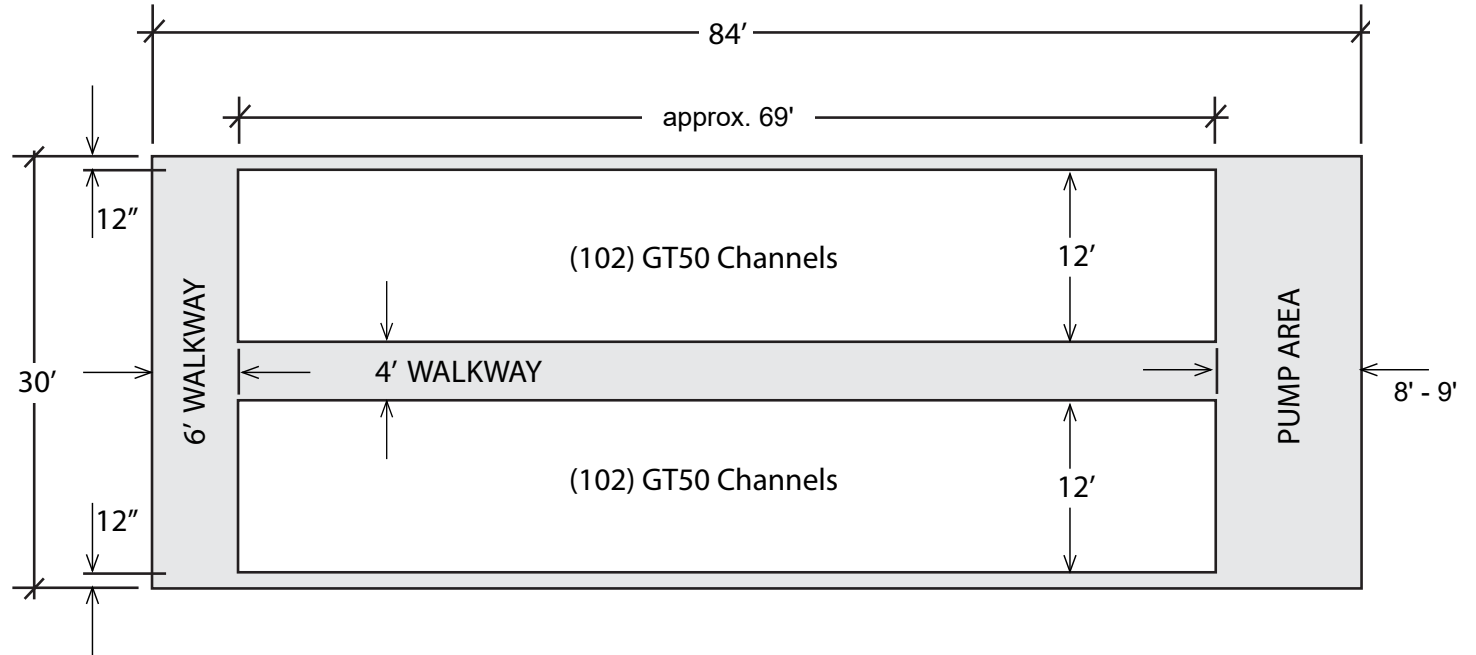
Layout and Frame Section—112618

112618: Commercial NFT System (30' x 84' Greenhouse)

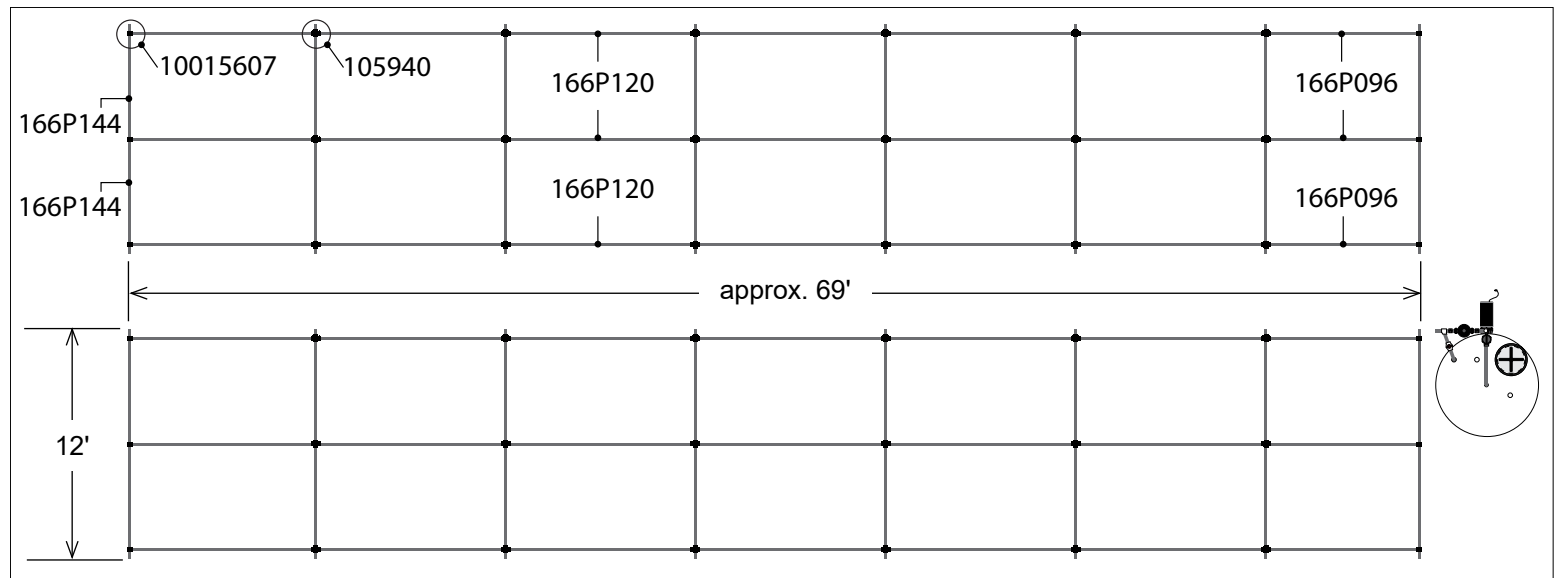
Use the diagrams on this page to layout and assemble the support frame for the NFT channels.

***ATTENTION:** Length of assembled NFT support frame (below) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.

NFT System Layout Diagram



Support Frame for NFT Channels

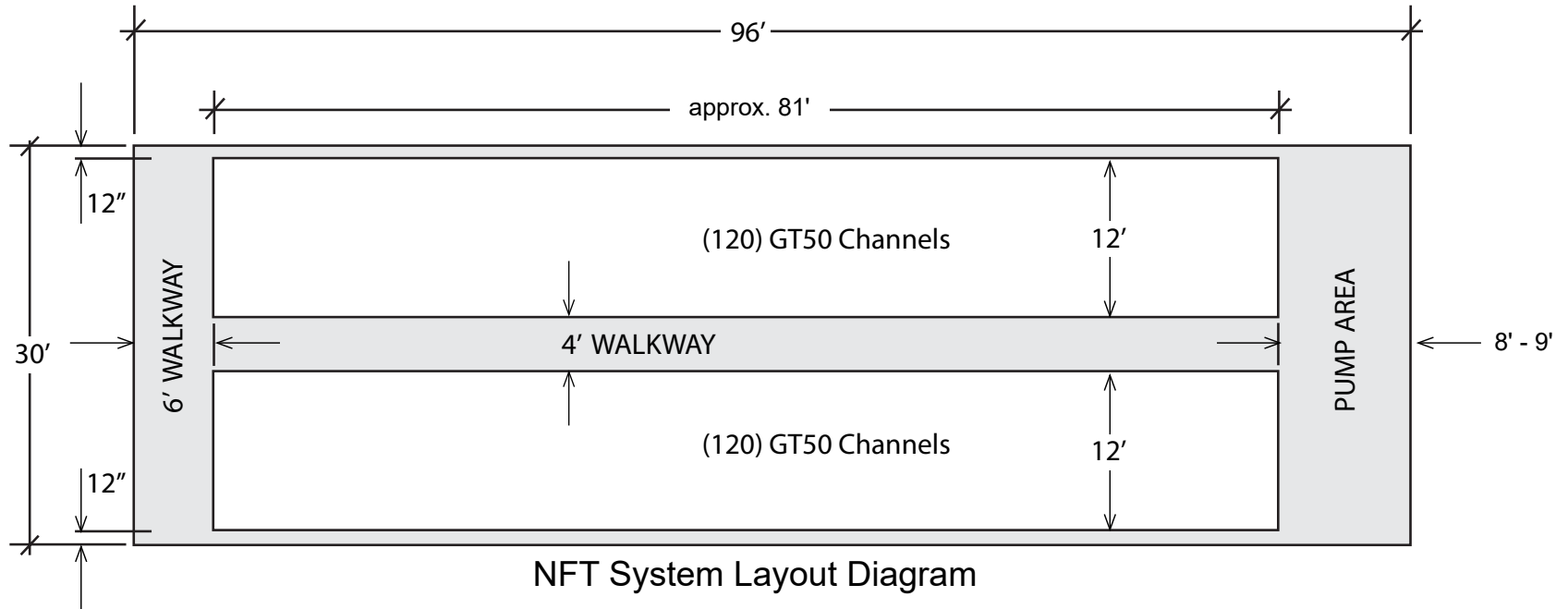


Layout and Frame Section—112619

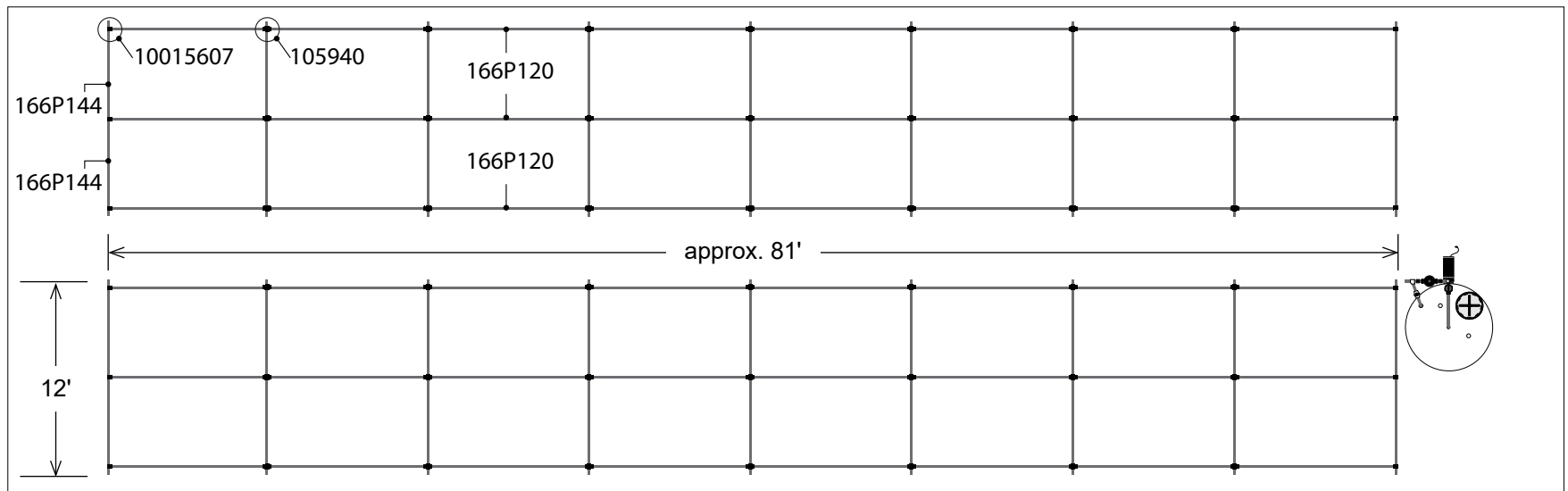
112619: Commercial NFT System (30' x 96' Greenhouse)

Use the diagrams on this page to layout and assemble the support frame for the NFT channels.

***ATTENTION:** Length of assembled NFT support frame (below) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.



NFT System Layout Diagram



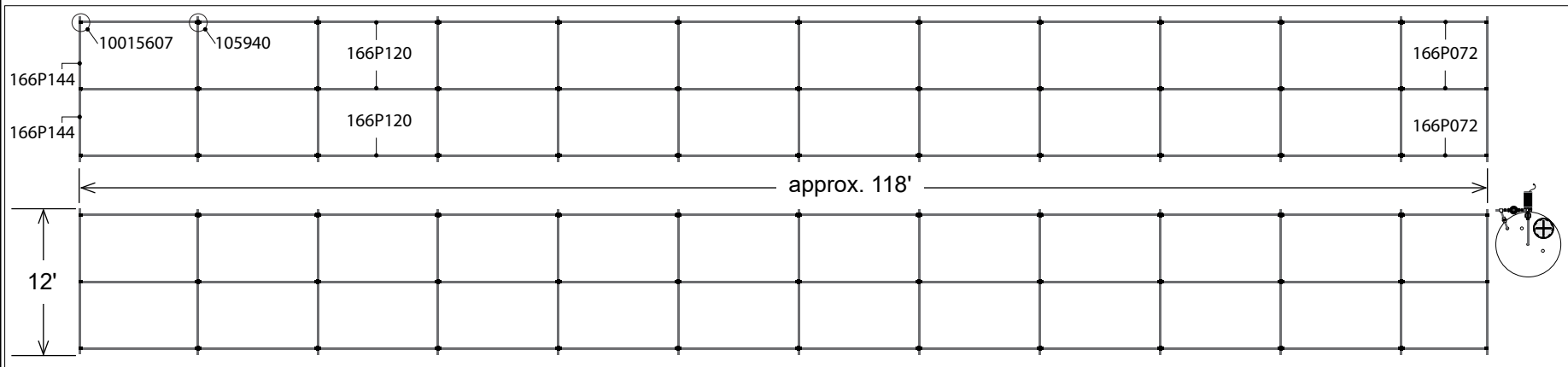
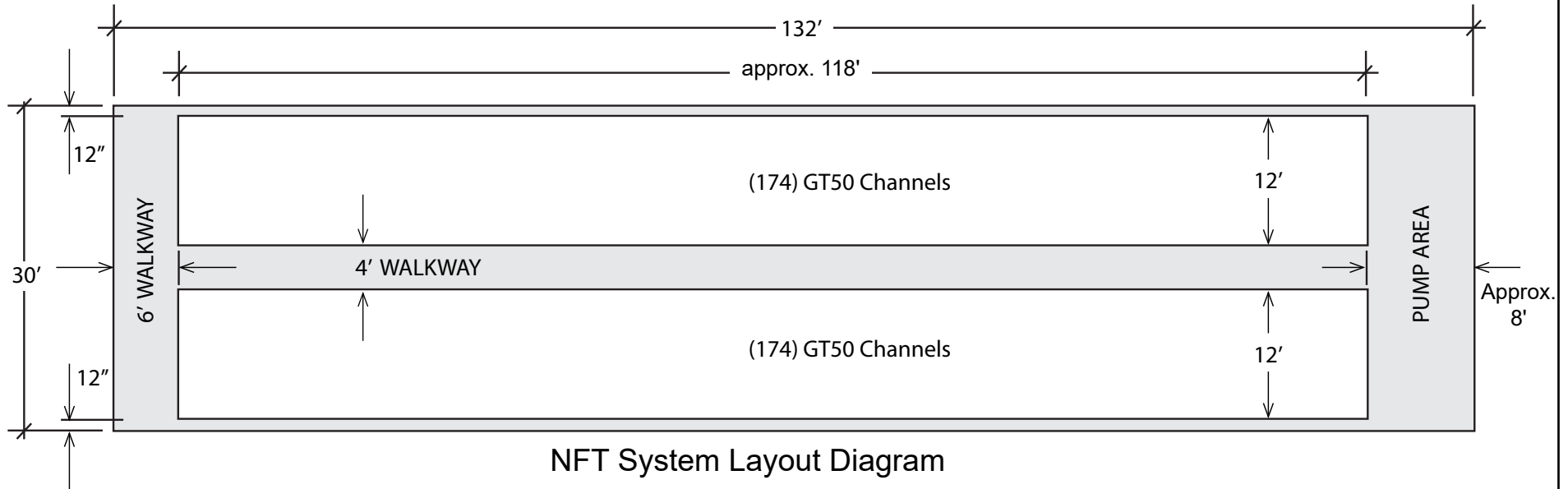
Support Frame for NFT Channels

Layout and Frame Section—112622

112622: Commercial NFT System (30' x 132' Greenhouse)

Use the diagrams on this page to layout and assemble the support frame for the NFT channels.

***ATTENTION:** Length of assembled NFT support frame (below) may vary depending on assembly technique and minor differences in overall pipe and fitting dimensions.



Additional Photos for Reference



Additional Photo: Sample Fertigation System

FERTIGATION SYSTEM

If your Grow-Tek Commercial NFT System includes a fertigation system, consult the fertigation information to properly connect it. These photos show a sample NFT system that also includes a fertigation system. Additional pvc tubing and fittings, as well as a support frame for the fertigation system, are needed. Consult your sales representative for additional information and details. (Actual NFT system may differ from what is shown.)

