

113501
Ebb & Flow System



System requires a timer to control the main pump and to set watering cycles. Additional purchase required.

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

ATTENTION: Reservoir, lid, trays and/or plumbing
components shown throughout this guide may vary in style
or color. All applications are the same. Adjust as needed.

113501 4' x 4' System

Important Information

READ THIS DOCUMENT BEFORE YOU BEGIN

Thank you for purchasing the 113501 Ebb & Flo 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 the system. Please read and understand these instructions **before** you begin. If you have any questions during the assembly, contact customer service.

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 system. Additional tools may be needed.

- Level (4'- recommended)
- Wrench set to level frame
- Ratchet with 1/2" socket to assemble frame
- Adjustable pliers and small hammer
- Gloves to handle metal tubing
- 1" hole saw bit and drill
- Tool to cut 3/4" tubing
- Magnetic nut setter (5/16" x 2-9/16")

ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your 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.

PICTORIAL GUIDE

Larger parts may not be shown.



111302



111301



112770



111303



AC2804



112674



WF6504A



110077



WF3411



WR1095
Tape



111046



110725
Air Pump



112838
Tek Screw



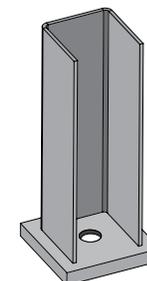
FAG338B



FALB34B



FAME51B



112477



113030S03

TIMER REQUIRED – ADDITIONAL PURCHASE

This system requires a timer to control water pump and to set watering cycles. Timer is not included and requires an additional purchase.

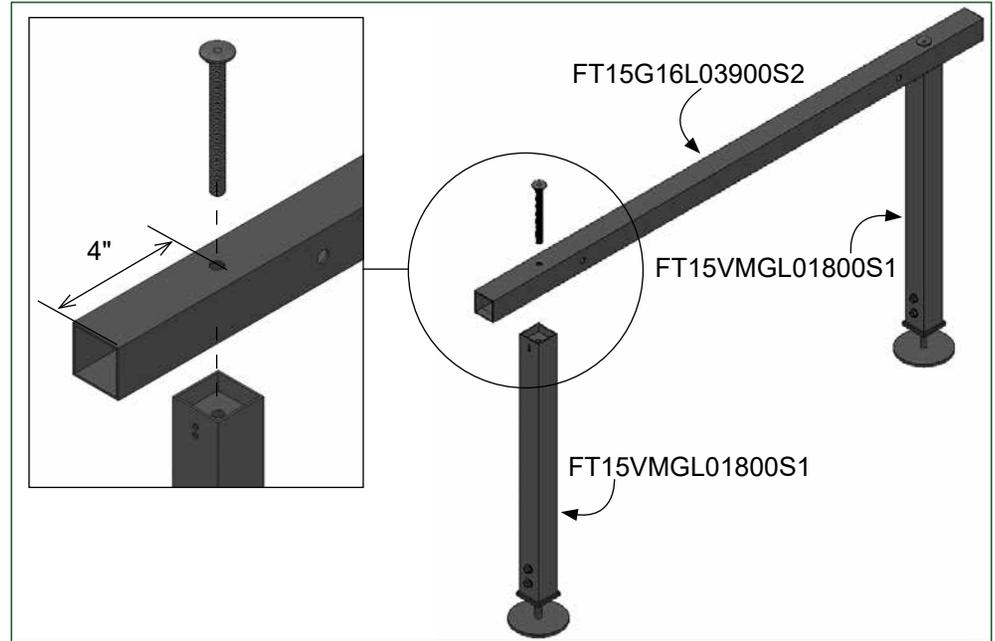
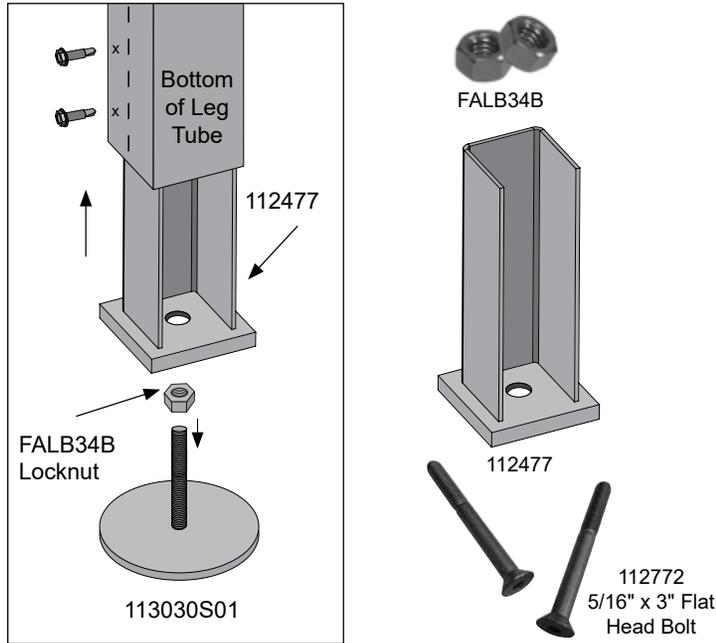
If you do not have a timer for your system, contact your sales representative for additional information.

Attach Leg Tubes

1

ATTACH LEG TUBES

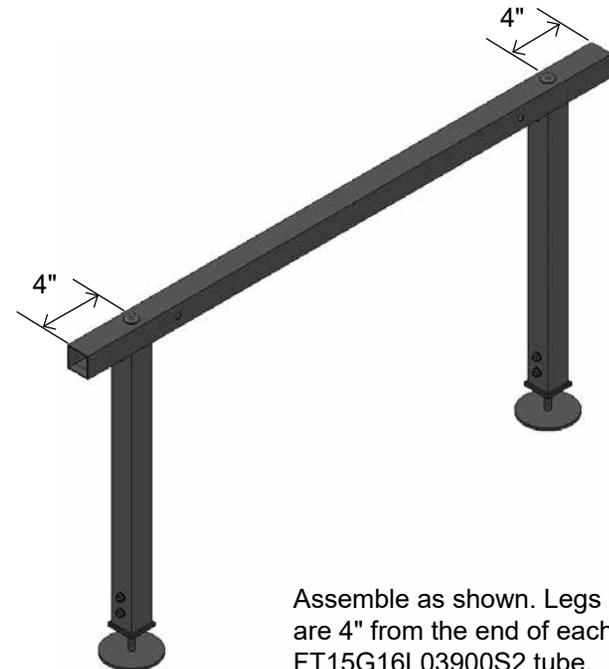
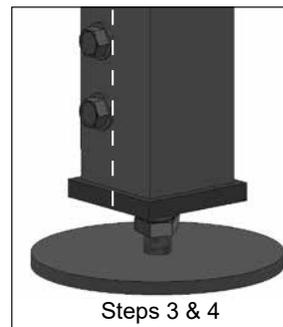
Assemble frame on a flat, level surface.



5. Secure leg tubes to FT15G16L03900S2 tubes using 112772 flat head bolts.

Complete these steps to install each 112477 insert:

1. Add one FALB34B nut to threaded stud of each 113030S01 foot and attach one foot to each 112477 insert.
2. Slide one 112477 insert assembly into bottom of each 18" vertical leg tube. Tap gently with a small hammer if needed to seat in place.
3. Secure each insert to each tube using two (2) 112838 Tek screws. **Install screws through leg tube and wall of the 112477 insert and not the open side of the insert. Install screws slightly off center line of the leg tube to prevent contact with threaded rod.**
4. Adjust 113030S01 leveler so it is seated against threaded plate of insert and locknut. See diagram to the right.



Assemble as shown. Legs are 4" from the end of each FT15G16L03900S2 tube.

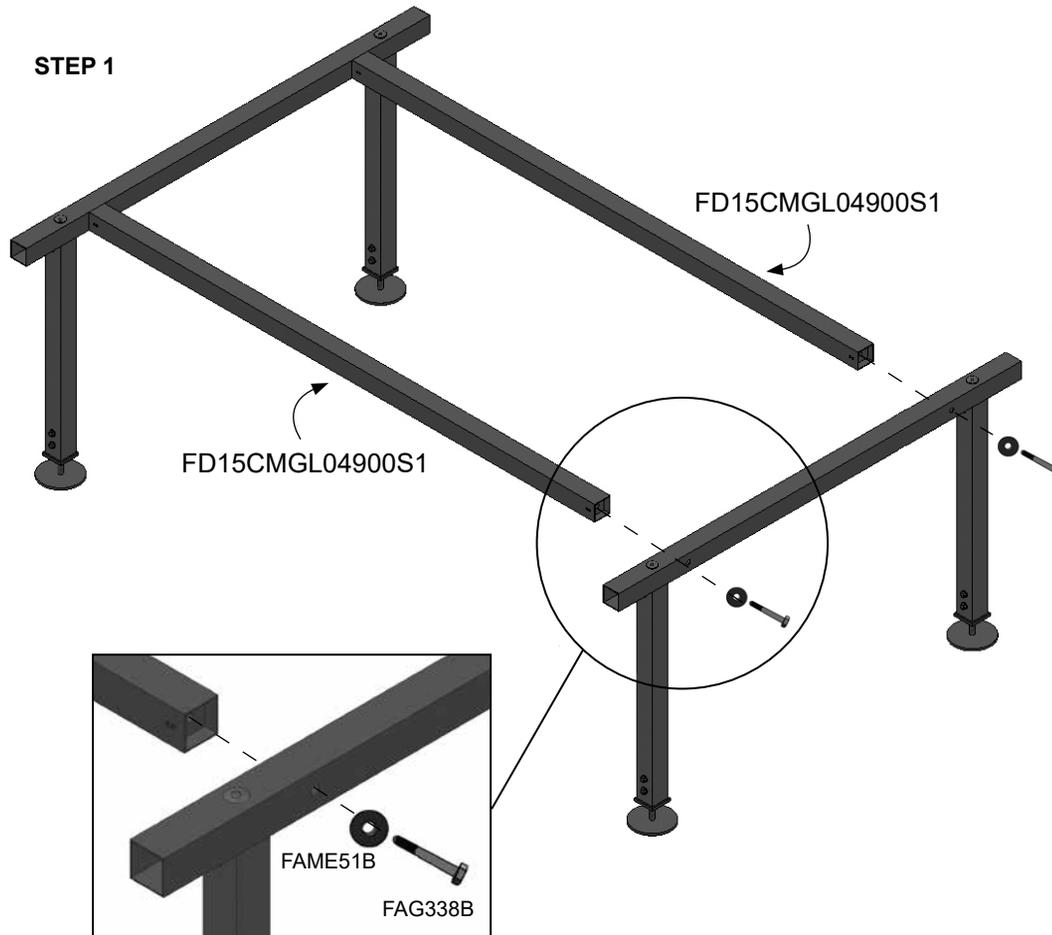
Assemble Main Frame

2

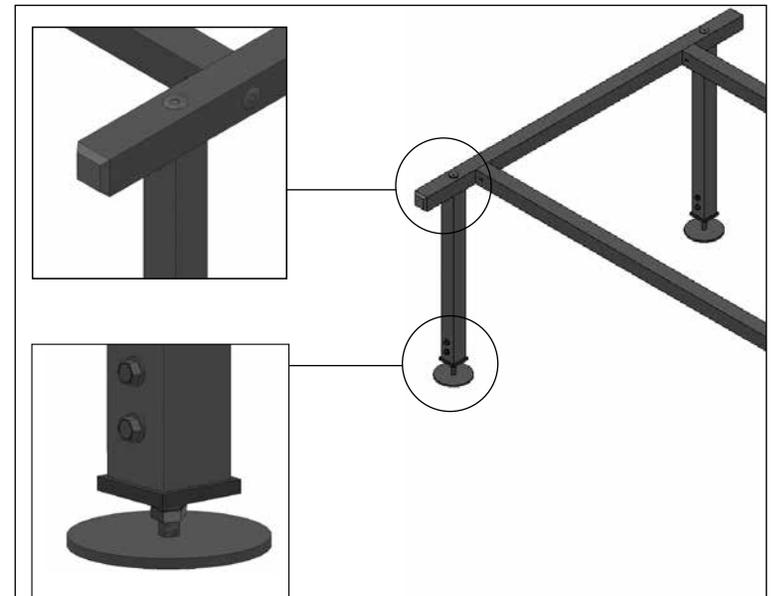
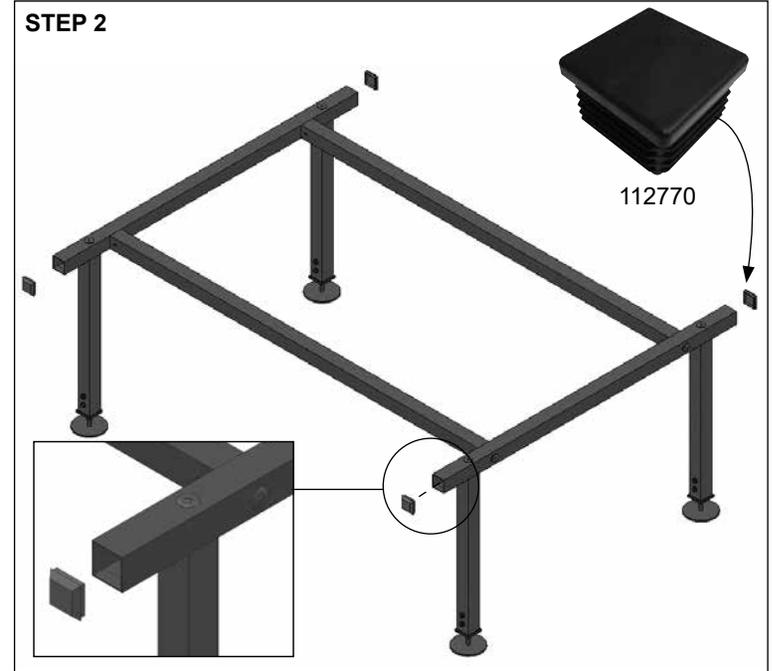
ASSEMBLE MAIN FRAME

Assemble frame on a flat, level surface.

STEP 1



STEP 2



STEP 3

1. Use the FAG338B (5/16" x 3") hex head bolts and FAME51B flat washers to complete the frame assembly. Tighten all connections until snug.
2. Install one 112770 finishing cap in each horizontal frame tube. Gently tap into tube if needed.
3. Level the frame as needed. Tighten locknut against the insert plate to secure leveler.

Prepare Propagation Tray

3

PREPARE 111106 PROPAGATION TRAY (4' x 4')

ATTENTION: ACTUAL TRAY IS BLACK. ORIGINAL WHITE TRAY IS NO LONGER AVAILABLE.

Complete these steps to drill the holes in the propagation tray.

1. With assistance, carefully flip the tray over on the assembled frame so the bottom is facing up.
2. At one end of the tray, locate the flat area with dimples that identify hole locations.
3. Using a 1-3/8" hole saw bit and a drill, carefully drill the bulkhead holes through the bottom of the propagation tray.
4. Clean debris from the tray and around the holes.
5. Continue with the installation of the bulkhead fittings.



Install Bulkhead Fittings

4

INSTALL BULKHEAD FITTINGS

System is equipped with two (2) 111301 bulkhead fittings which are used to connect the tray to the lower reservoir. Gather these parts and install the fittings:

- 111301 Bulkhead fittings (2)



1. Flip tray over so inside is facing up and center tray on frame.



2. Take one 111301 bulkhead fitting and verify that the fitting includes a washer.



3. Insert the fitting with washer through one of the holes.



4. Seat fitting tightly in the hole.



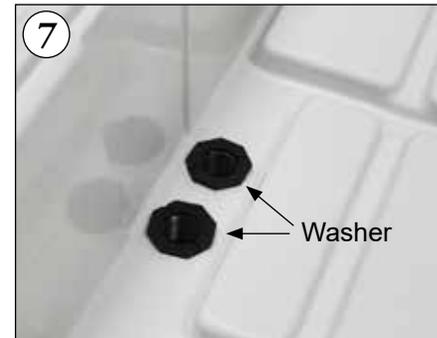
5. Take the bulkhead nut and turn it onto the threaded shaft. *Tighten until fitting is snug.*

NOTE: Use a large pair of adjustable pliers if necessary. **Do not overtighten the nut!**



6. Repeat the steps to install the remaining bulkhead fitting.

NOTE: Check both fitting nuts to ensure each is tight.



7. Inspect the assembled fittings to ensure that a washer is present on the inside between each fitting and the tray.

8. Continue with the next procedure.

Prepare Reservoir Lid

5

PREPARE RESERVOIR LID

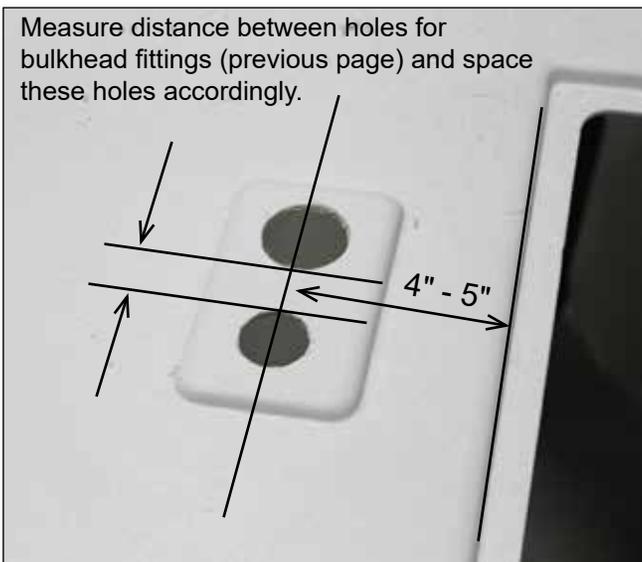
ATTENTION: Reservoir and lid style shown throughout this guide may vary. When needed, critical dimensions are noted for hole locations.

Complete these steps to drill the holes in the propagation tray.

1. With assistance, carefully place the reservoir lid on supports for drilling. Do not drill the lid over the reservoir. *Debris can damage the pump and contaminate the nutrient solution when reservoir is filled.*
2. Drill the first hole using a 1-3/8" hole saw bit. This hole is for the 3/4" tube from the pump. Hole size allows both the tube and the power cord from the pump to pass through it. See next page for details.
3. Drill the second hole using a 1-1/8" hole saw bit. This hole is for the 3/4" drain tube from the propagation tray.

NOTE: Hole can be drilled using the 1-3/8" bit if it is the only bit available. Smaller hole protects nutrient solution from light and debris.

4. Where preferred, drill two holes for air pump tubes using a 5/16" drill bit. Hole location is not critical.
5. Clean debris from the lid and place the lid on the reservoir. Slide the reservoir under the frame and propagation tray.



Assemble Supply Tube

6

ASSEMBLE SUPPLY TUBE

1. Cut two (2) three inch (3") pieces of 3/4" tubing (WF6504A).
2. Wrap the fitting threads of the 112674 adaptors 3-4 times in a clockwise direction with the supplied thread-sealing tape as shown (WR1095).
3. Construct the supply tube assembly as shown. Ensure that the 3/4" hose is installed fully over the barbed fitting surfaces of the valve and adaptors.



Apply tape to all threads.



4. Push the non-valve end of the supply tube assembly snug onto one of the bulkhead fittings in the tray.
5. Slide lid back and set pump in reservoir. Center pump under supply tube valve and measure from top of pump to the bottom of the supply tube valve, as shown to the right.
6. Cut one section of 3/4" tube to length and check fit. Trim if needed.

NOTE: Pump should sit on bottom of reservoir with no stress on tube or fittings once tube is connected.

7. Continue on the following page.



Install Pump and Attach Supply and Drain Tubes

7

INSTALL PUMP AND SUPPLY TUBE

ATTENTION: Actual reservoir, lid, and tube components may differ from the model used in the photos. Procedures are similar. Adjust accordingly.



1. Pull lid into place on reservoir, fishing the 3/4" tube up through the larger hole and center reservoir under the frame and tray. Reach through port hole and slide end of power cord up through one hole in reservoir lid.



2. Pull cord through hole and place it on top of the lid away from the port hole.



3. Take the section of 3/4" hose cut from the previous page and slide end through the hole where the power cord is.



4. Slide tube onto the pump fitting. Ensure tube is seated tightly on the pump fitting.



5. Slide pump tube onto end of in-line valve of the assembled supply tube.

6. Inspect assembly and ensure that tube and pump are aligned.



7. Measure distance between reservoir lid and remaining bulkhead fitting. Add a few inches to measurement so tube extends through lid when attached to fitting. Tube can be trimmed later if too long.



8. Slide drain tube through the second hole and install cut tube to the second bulkhead.



9. Check all fittings and clamps to ensure they are secure.

10. System is ready to use. Add water to cover pump and activate pump. Check fittings for leaks.

11. Turn pump off to check for proper drainage of the propagation tray.

Install the Air Pump and Tubing

8

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

ATTENTION: Actual reservoir, lid, and tube components may differ from the model used in the photos. Procedures are similar. Adjust accordingly.

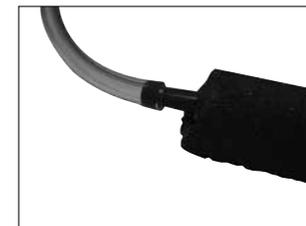
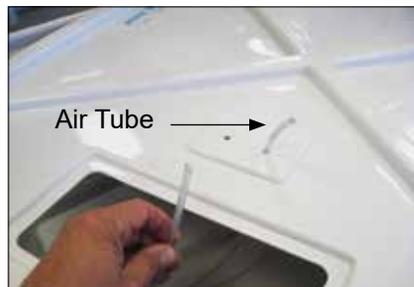
ATTACH THE AIR PUMP AND AERATOR STONES

For optimal system performance and to extend the life of the nutrient solution through increased oxygenation, an aerator pump and aerator stones are included. Position stones at the bottom of the reservoir opposite the water pump. *Air pump must remain above nutrient level to prevent siphoning.*

1. Choose a position for the air pump and use it to determine the length of each air tube. Cut two air tubes of equal length using the 110046 tubing.

ATTENTION: Position the air pump at a level that is **above the nutrient level at all times to prevent siphoning** of the reservoir in the event of a power outage.

2. Attach one stone to each line and set the stones in the reservoir. See photo for stone position opposite the water pump.
3. Place the reservoir cover on the reservoir and feed the tubing up through the access holes and connect the free end of each tube to the air pump.



4. Place the air pump in the position chosen in Step 1.
5. Connect the air pump to power and test the operation. Verify that air is filtering through each air stone. Monitor the air pump regularly to ensure proper operation of the aerator system.

NOTE: When the system is fully operational, the air pump will run continuously. **Do not connect the air pump to any circuit controlled by a timer or shutoff switch.**

6. After testing air flow, turn off the aerator pump until the system is fully functional.



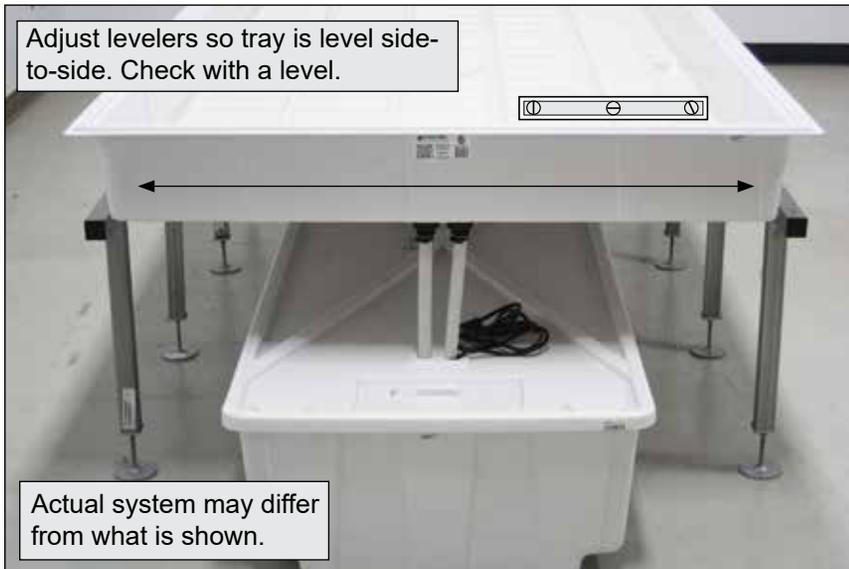
Adjust Levelers

9

ADJUST LEVELERS

Use the lower photos to determine how to set the slope of the frame. After adjusting each leveler as needed, use photos 1-4 to lock the leveler in place. A 9/16" wrench is needed.

Actual system may differ from what is shown.



Install Bulkhead Screen and Extensions

10

INSTALL BULKHEAD SCREENS AND EXTENSIONS

Bulkhead screens and extensions allow you to manage the nutrient solution level in the propagation tray. Screens can be used with or without the extensions. Depending on the application, extensions can be used with one screen on the drain tube to increase and maintain the level of the nutrient solution in the tray. A screen installed on the pump tube deflects water to ensure an even, steady flow. Install these items as needed to achieve the desired results.

Hand-tighten only during installation.



Photo above shows the bulkhead screens and extensions installed in both bulkheads.



Photo above shows the bulkhead screen and extension installed in one bulkhead. A screen without the extension is installed in the other.

