



## *110846 Fodder-Pro Feed System*



*110846 Fodder-Pro Feed System\**

*"...grow your own nutrient-rich fodder..."*

# Important Information

## READ THIS DOCUMENT BEFORE YOU BEGIN

Thank you for purchasing the 110846 Fodder-Pro Feed 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.

## SAFETY PRECAUTIONS

- Wear eye protection.
- Wear gloves when handling metal tubes.
- 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 Fodder-Pro Feed System. *Additional tools and supports may be needed.*

- Tape measure and marker
- Variable speed drill (cordless with extra batteries works best) and drill bit set with 3/16" or 13/64" bit
- Small hammer and gloves
- Level 4' (or longer)
- 109170 Plastic Pipe and Tube Cutter (included)
- Medium-size adjustable wrenches
- 1-3/8" hole saw bits
- Adjustable Pliers
- Ladder or work platform to work at the height of the fodder system frame.



## ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your fodder system. *This manual describes how to assemble a single Fodder-Pro Feed 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.
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.

## QUICK START GUIDE

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

**ATTENTION:** *This manual describes how to assemble one 110846 Fodder-Pro Feed System. If you are connecting this system to another, minor adjustments must be made to some of the procedures that follow. **Such an application is beyond the scope of this manual.***



## ELECTRICAL WARNING

This kit includes an electric water pump and an electric air pump. Read and follow all the documentation and safety material sent with those items to prevent an electrical shock during installation and use.

Be sure to mount the circuit breaker box away from the fodder frame.

Fodder frame is metal and will conduct electricity! Exercise caution if working around or on the frame with electric power tools. *Use cordless, battery-power tools.*

All electrical circuits used to power the pumps are to include GFI outlets if these items are not hard wired.

**CONSULT THE SERVICES OF A QUALIFIED ELECTRICAL TECHNICIAN WHEN INSTALLING THE PUMPS.**

## *Important Information*

### PICTORIAL GUIDE

The following graphics and photos will help identify the different parts of the fodder system. (Some parts may not be shown.) Quantity when noted is in ( ) following the stock number.



111069



WF1570 (24)



WF6682 (56)



110730



110729



WF4135



FA4482B  
Tek Screw



111044



110731



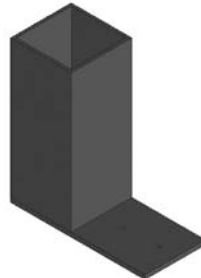
WF2940



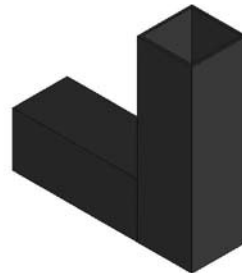
WF1787



AC2804



111484



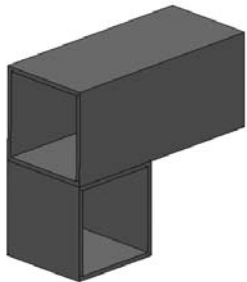
104625



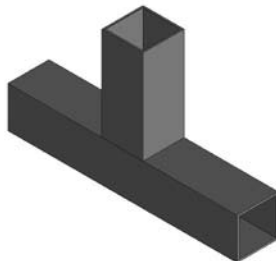
(16) S15P116 @ 116"  
(2) S15P112 @ 112"  
(2) S15P082 @ 82"  
(2) S15P04975 @ 49-3/4"  
(16) S15P024 @ 24"



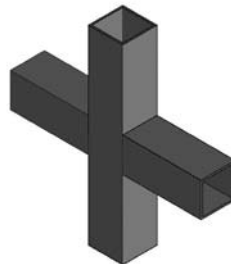
111067



111485



104626



104627



110832 (1)  
Simer Utility Pump



110741



WF6990 (4)  
PVC Cement

# Important Information

## PICTORIAL GUIDE (continued)

**ATTENTION:** RESERVOIR AND FRAME ENDS (110877) SHOWN IN SOME PHOTOS MAY DIFFER FROM THOSE THAT SHIPPED WITH THE FODDER SYSTEM.



111073 Reservoir (1)



111544 Reservoir Lid (1)



**ATTENTION:** THIS KIT SHIPS WITH APPROXIMATELY 4' OF WF4135 1" PVC PIPE WHICH IS CUT INTO SHORT PIECES DURING ASSEMBLY. PIPE SECTION OR SECTIONS MAY OR MAY NOT SHOW MARKINGS, DEPENDING ON WHERE THE ORIGINAL BULK PIPE WAS CUT. USE THE ABOVE PHOTO TO CONFIRM THE PIPE SPECIFICATIONS WHEN NEEDED.



111043



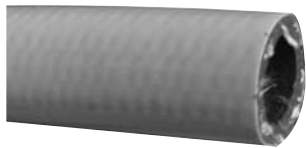
110743



109260 Air Stone (2)



110091 Clear Vinyl Tube



WF1170 Garden Hose



105794



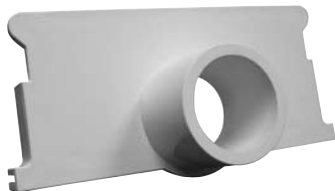
109170



110408 Poly Tube



100441 (1)  
Nut Setter



110824 (4)  
End Cap w/ Outlet



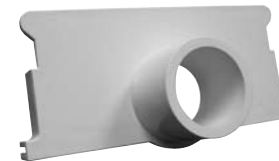
110825 (4)  
End Cap No Outlet



109071



110725 (1)  
Air Pump



111029 (90)  
End Cap w/ Outlet



111030 (90)  
End Cap No Outlet

## Important Information

### SPECIAL NOTES AND CAUTIONS

The new support frame for the 110846 Fodder Pro Feed System is designed to save assembly time and to better serve your growing needs. Most diagrams throughout this manual show the newly designed fodder frame. However, you may notice that a few of the photos show a frame that differs slightly in design. **All diagrams showing the required assembly steps and dimensions apply to your fodder system frame. Once the frame is assembled, the installation of the trays is the same regardless of the frame shown in some photos and diagrams.**

#### CAUTION!

**DO NOT CLIMB ON FRAME!**

**TO PREVENT INJURY AND POSSIBLE DAMAGE TO THE FODDER SYSTEM AND RELATED COMPONENTS, NEVER CLIMB ON THE ASSEMBLED OR PARTIALLY ASSEMBLED FRAME.**

**NEVER USE THE FRAME ENDS AS A LADDER TO REACH THE UPPER LEVEL OF THE FODDER FRAME!**

**ALWAYS POSITION THE FODDER TRAYS ON THE DIFFERENT LEVELS IN A WAY THAT EVENLY DISTRIBUTES THE WEIGHT. NEVER LOAD ALL HEAVY TRAYS ON ONE SIDE OR ON THE TOP LEVEL OF THE ASSEMBLED FRAME. ALWAYS PLACE HEAVY TRAYS ON THE LOWER LEVELS ON EACH SIDE OF THE FRAME.**

**NEVER REMOVE MATURE FODDER FROM TRAYS ON ONE SIDE OF THE FRAME ONLY. ALTERNATE FROM SIDE TO SIDE TO MAINTAIN EVEN WEIGHT ON THE FRAME WHEN HARVESTING FODDER.**

**ANCHOR THE BASE RAIL OF EACH FRAME END TO THE CONCRETE USING ANCHOR BOLTS WHEN POSSIBLE. PURCHASE BOLTS LOCALLY OR CALL YOUR SALES REPRESENTATIVE FOR ADDITIONAL INFORMATION.**

**CONSULT THE SERVICES OF A QUALIFIED CONTRACTOR FOR OTHER WAYS TO ANCHOR YOUR SYSTEM WHEN IT IS NOT POSITIONED ON CONCRETE.**

**ATTENTION:** CONSULT THE DIAGRAMS NEAR THE BACK OF THIS GUIDE TO IDENTIFY CRITICAL DIMENSIONS, PART NUMBERS, AND PART LOCATIONS FOR THE FODDER FRAME.

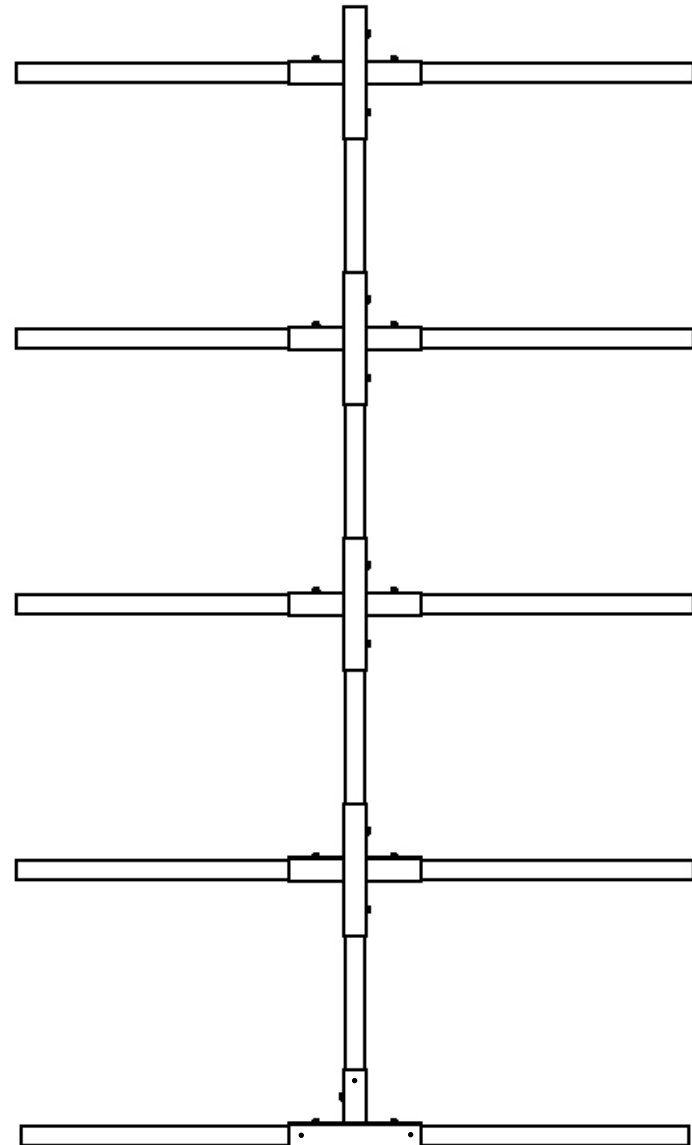


Diagram above shows the end frame for your 110846 Fodder-Pro Feed System. Some diagrams may show an end frame of a different design.

# Assembly Instructions

# 1

## ASSEMBLE MAIN FRAME: End Frames (2)

Consult the Quick Start section of this guide for an overview of the system and additional diagrams. Gather the parts and complete the steps that follow to assemble the two end frames.

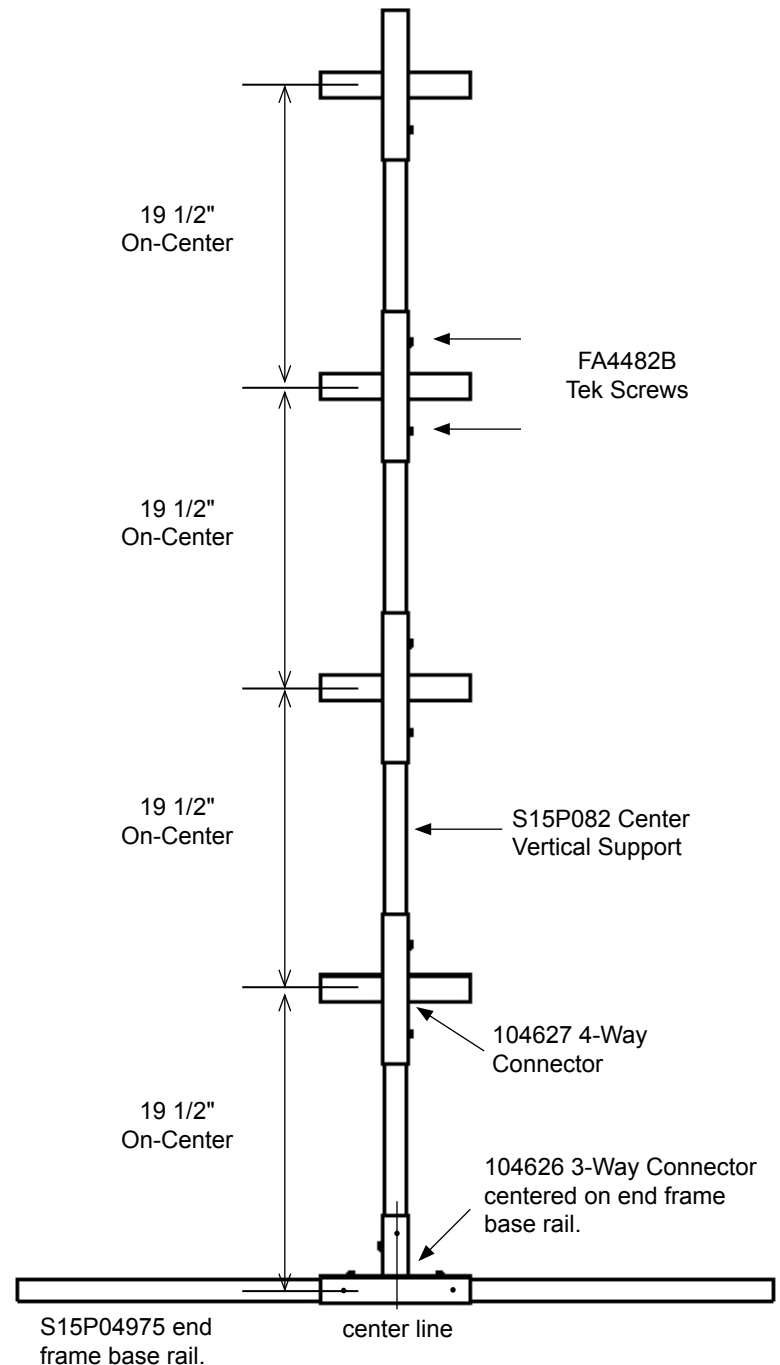
Required parts for *each end frame*:

- (1) 104626 3-Way Connector and (4) 104627 4-Way Connectors
- (1) S15P04975 Square Tube (plain) for base rail
- (1) S15P082 Square Tube (plain) for center vertical support
- FA4482B Tek Screws and 100441 Magnetic Nut Setter

**ATTENTION:** Install Tek screws in positions that will not interfere with the installation of the hoses, fodder channels, and related frame fittings.  
**Review all diagrams for clarification.**

Complete these steps:

1. Gather the parts and tools to assemble one end frame.
2. Slide the 104626 connector onto the S15P04975 tube, center it on the tube, and secure using two (2) self-tapping Tek screws.
3. Next, slide four (4) 104627 4-way connectors onto the S15P082 center vertical support tube.
4. Carefully, slide one end of the vertical support tube into the remaining opening of the 3-way fitting and secure using two (2) Tek screws.
5. Using the diagram in the Quick Start section, evenly space each 4-way connector on the vertical support tube and secure in place using two (2) Tek screws for each connector. **Space connectors at 19-1/2" on-center as shown.**
6. Repeat these steps to assemble the remaining end frame.
7. Verify that the end frames are assembled the same and that the spacing between the shelves is **19-1/2" on-center**.





## 1

### ASSEMBLE MAIN FRAME: Support Arm Installation

Gather the parts and complete the steps that follow to install the shelf support arms.

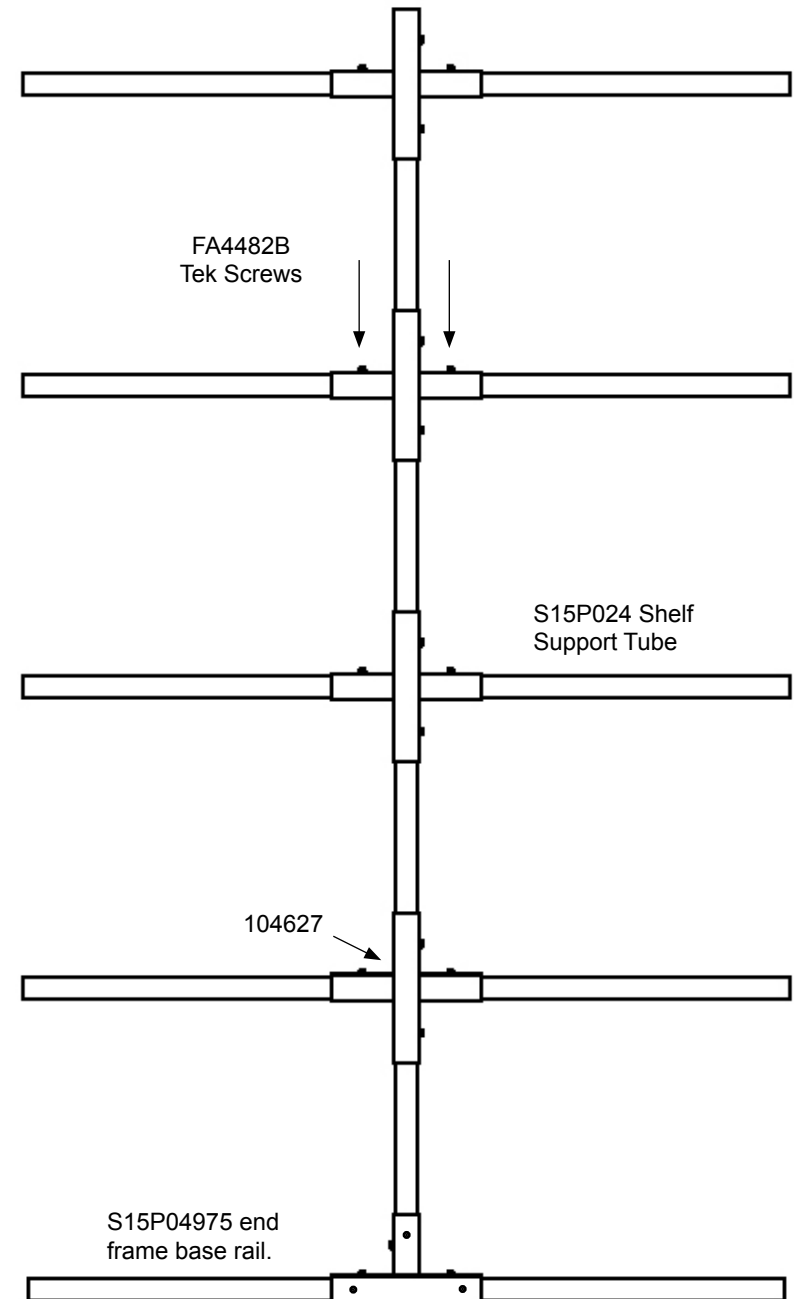
Required parts for this procedure:

- (16) S15P024 Square Tubes (plain) for shelf support arms
- (8) S15P116 Square Tubes (plain) for inner frame tubes
- (16) 111484 1-Way Connectors
- FA4482B Tek Screws and 100441 Magnetic Nut Setter

**ATTENTION:** Install Tek screws as shown. *Review all diagrams for clarification.*

Complete these steps:

1. Gather the parts as identified above.
2. Insert one 24" S15P024 shelf support arm into an open socket of a 4-way connector, verify that it is tight against the connector, and secure using a Tek screw.
3. Repeat until all 24" square tubes are attached to the end frames.
4. Verify that the outside-to-outside width of each shelf is the same.
5. Continue with the installation of the inner frame tubes.



## 1

### ASSEMBLE MAIN FRAME: Install Inner Frame Tubes

Gather the parts and complete the steps that follow to install the shelf support arms.

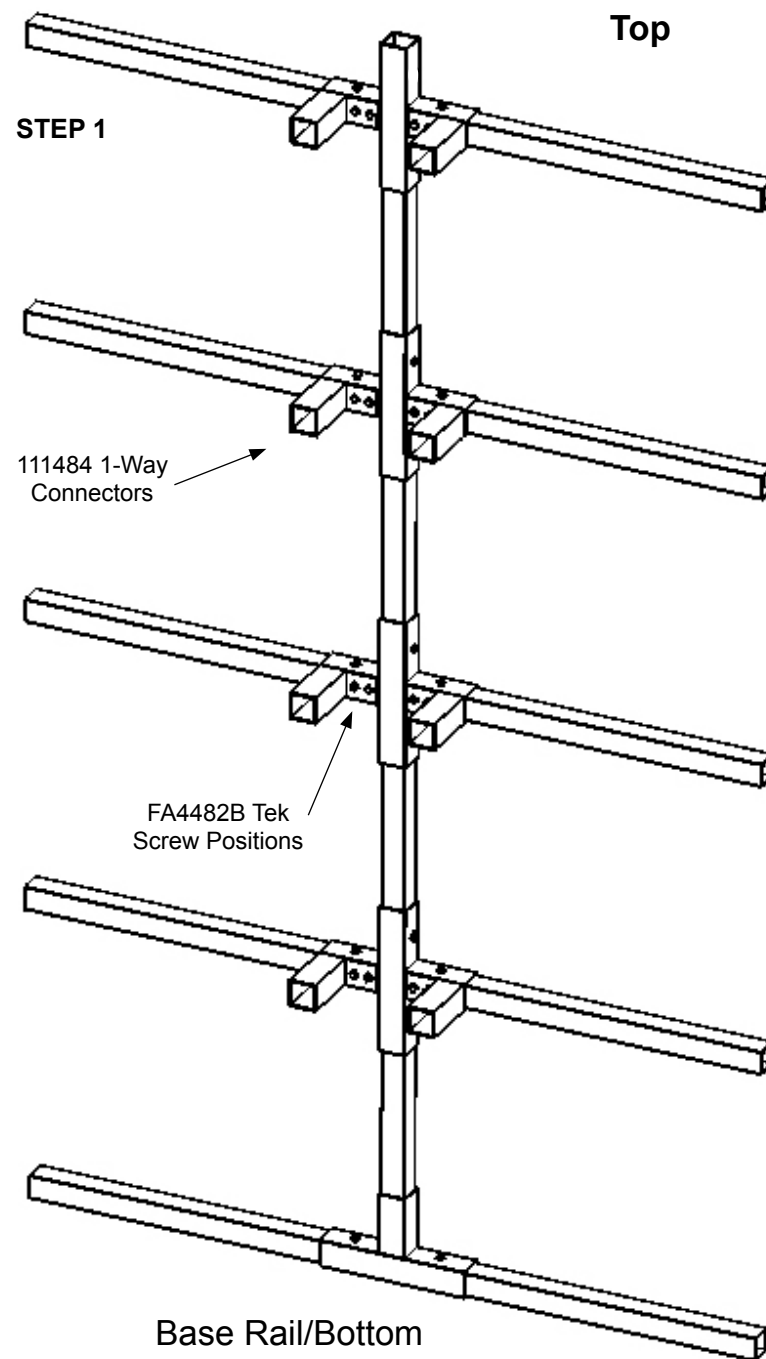
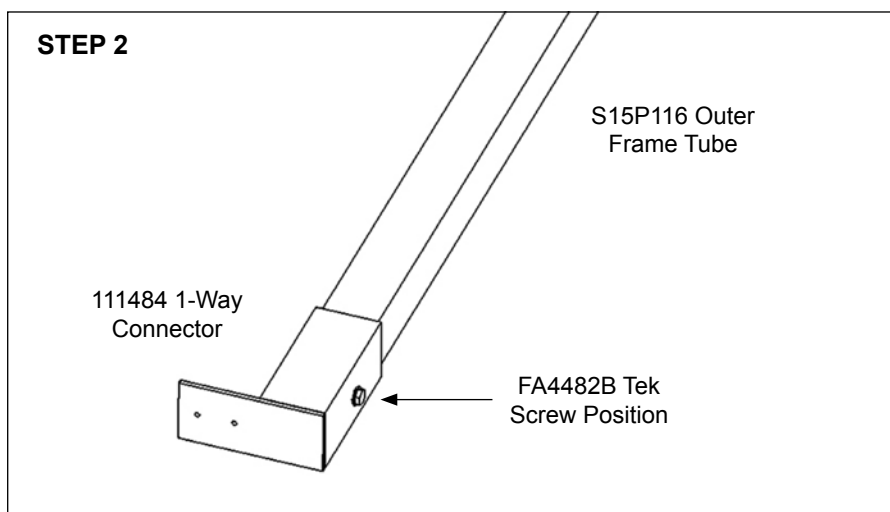
Required parts for this procedure:

- (8) S15P116 Square Tubes (plain) for inner frame tubes
- (16) 111484 1-Way Connectors
- FA4482B Tek Screws and 100441 Magnetic Nut Setter

**ATTENTION:** Install Tek screws as shown. *Review all diagrams for clarification.*

Complete these steps:

1. Position one end frame on a flat surface and attach eight (8) 111484 1-way connectors as shown. Verify that the fitting flanges are toward each other. Use two (2) Tek screws for each fitting. See diagrams.
2. Take the remaining 111484 1-way connectors and the eight (8) 116" S15P116 tubes and attach one connector to the end of each tube using one Tek screw per connector. Tube should bottom out in connector. See diagrams for screw location. *Measure the tubes; do not use the 112" tubes! Verify that you are using the 116" square tubes.*

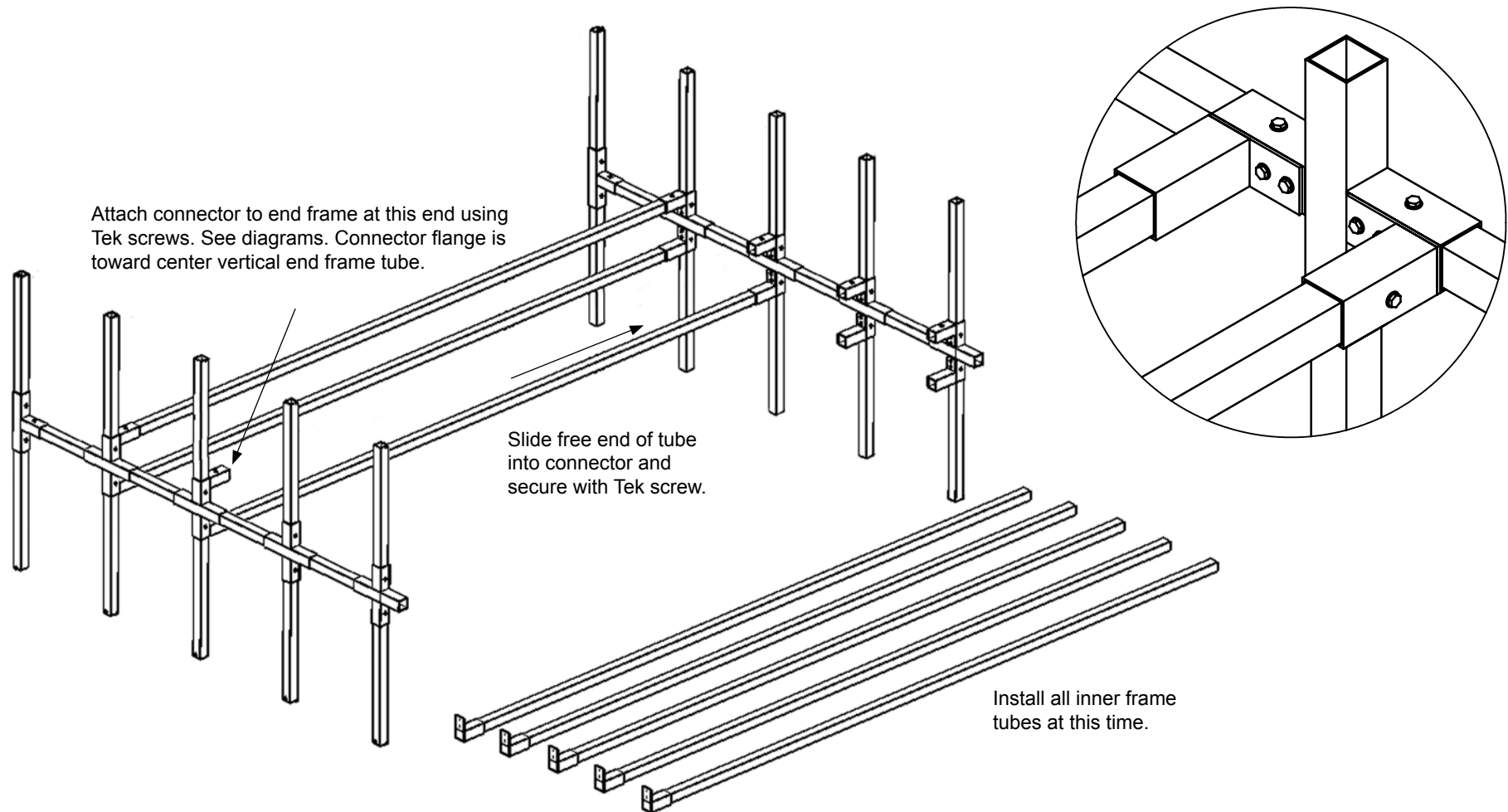




## 1

### ASSEMBLE MAIN FRAME: Install Inner Frame Tubes—continued

3. With assistance, position the end frame with the attached 111484 connectors on its side, slide the free end of one 116" tube assembly into a connector and secure using one Tek screw. Verify that the connector flange attached at the other end of the tube matches the flange attached to the end frame.
4. Move to the end of the 116" tube with the attached connector, stand the remaining end frame on its side, and attach the 111484 connector to the 4-way connector on the same shelf level.
5. Repeat this process until all inner frame tubes are installed.
6. Continue with the assembly and installation of the outer frame tubes.



## 1

### ASSEMBLE MAIN FRAME: Assemble and Install Outer Frame Tubes (One Side Only at this Time!)

Gather the parts and complete the steps that follow to install the outer frame tubes *for one side of the frame*.

Required parts for this procedure:

- (8) S15P116 Square Tubes (plain) for outer frame tubes
- (16) 111485 2-Way Connectors with Off-Set
- FA4482B Tek Screws and 100441 Magnetic Nut Setter

Complete these steps:

1. Gather the parts as identified above.
2. Attach one (1) 111485 connector to each end of the 116" (S15P116) tubes as shown. Pre-mark each 116" tube (Fig. A) to accurately place the connector on the tube. Secure connectors to the outer frame tubes using one Tek screw for each connector. **Do not install outer frame tube flush with the end of the connectors.** The smaller off-set tube of the connection slides over each shelf support tube attached to the end frames. See diagrams and photos.

**ATTENTION:** LENGTH OF ALL ASSEMBLED OUTER FRAME TUBES WITH ATTACHED CONNECTORS WILL BE **119 1/2"**. ADJUST CONNECTOR POSITIONS AS NEEDED TO ACHIEVE THIS DIMENSION. SEE DIAGRAMS. CONSTRUCT ALL EIGHT (8) OUTER FRAME TUBES. FOUR (4) WILL BE USED IN THIS PROCEDURE; THE REMAINING FOUR (4) WILL BE INSTALLED AFTER THE RETURN DRAIN CHANNELS ARE INSTALLED.

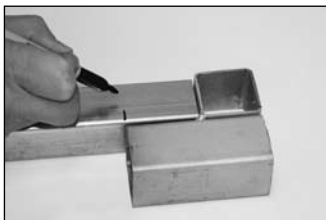


Fig. A: Pre-mark tube to help assemble the outer tube.

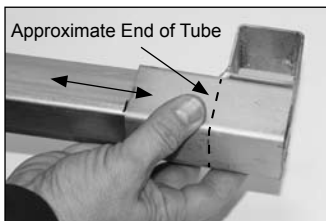
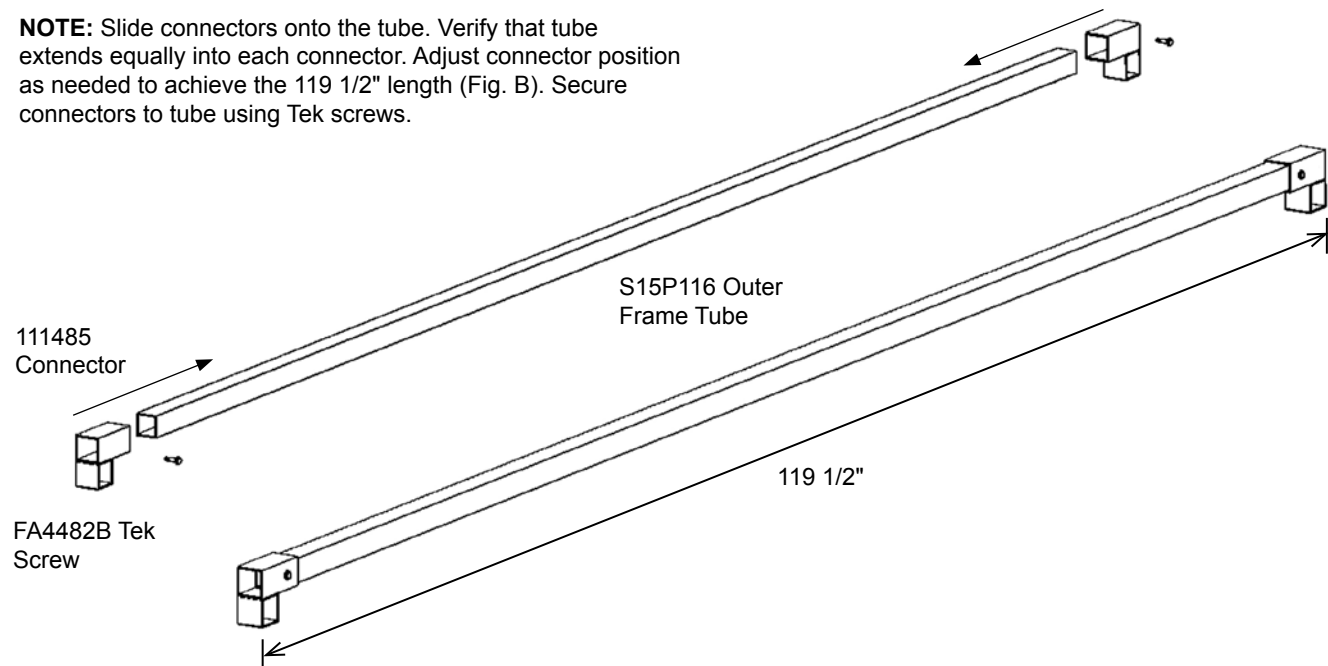


Fig. B: Minor adjustments to the connector position will be require when setting length.

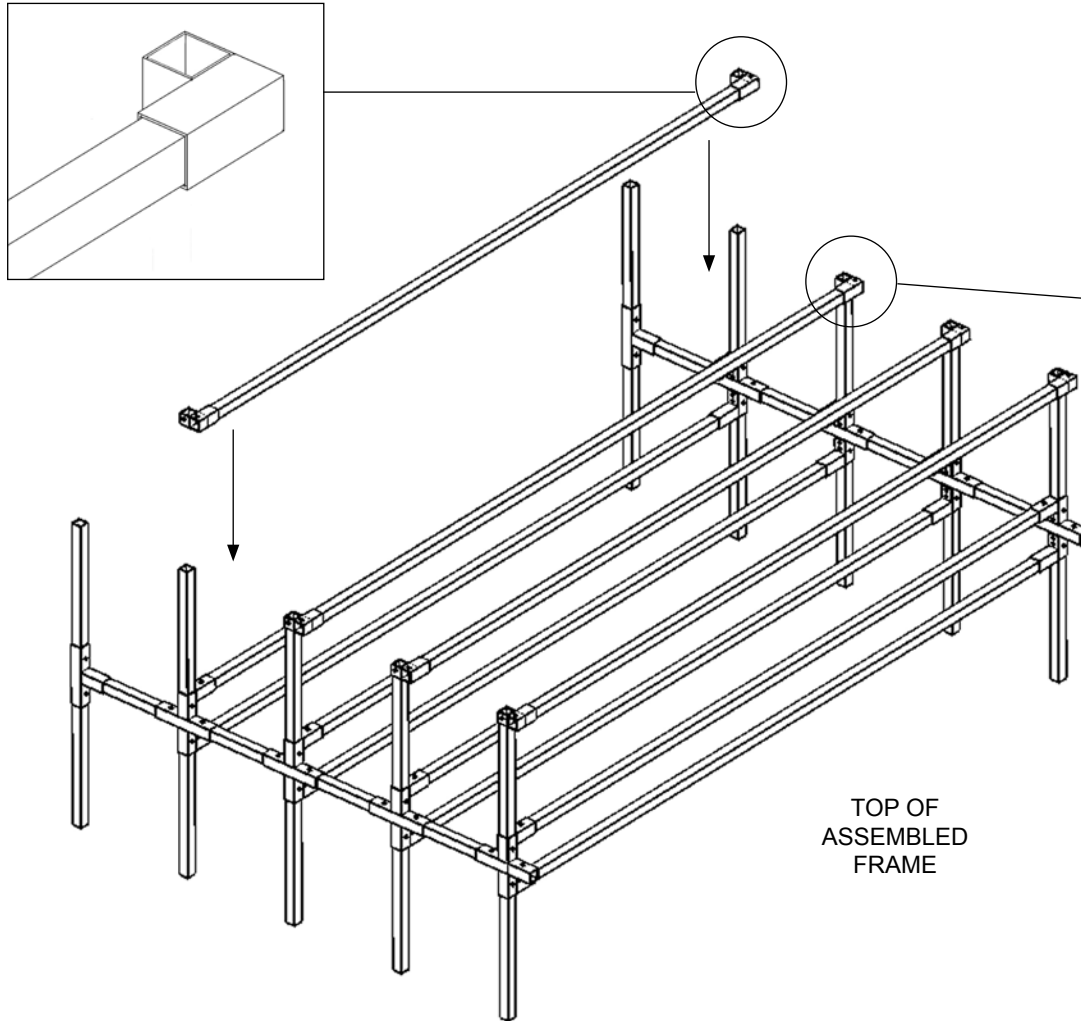
**NOTE:** Slide connectors onto the tube. Verify that tube extends equally into each connector. Adjust connector position as needed to achieve the 119 1/2" length (Fig. B). Secure connectors to tube using Tek screws.



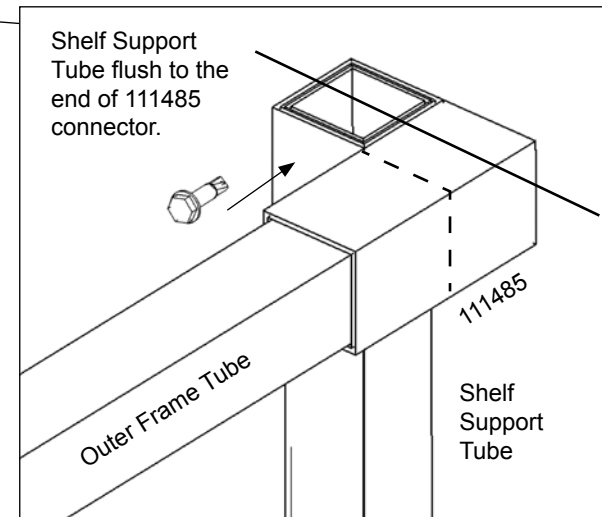
## 1

### ASSEMBLE MAIN FRAME: Assemble and Install Outer Frame Tubes (One Side Only at this Time!) — continued

3. With assistance, slide each outer tube onto the frame assembly and secure using Tek screws. Install the outer tube for one side only at this time. **When installed correctly, shelf tubes are flush to the end of the 111485 connectors.**
4. Continue with the installation of the outer base tubes and two of the corner braces.



Slide each connector of the outer frame tube over the shelf support tubes until shelf tube is flush to the end of the connector. Install a Tek screw through the connector into the shelf tube to secure in place.



**NOTE:** Dashed line shows approximate end of outer frame tube. Actual position may vary slightly.

## 1

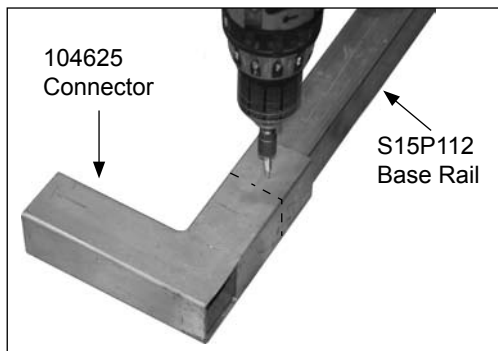
### ASSEMBLE MAIN FRAME: Assemble and Install the Two (2) Outer Base Rails and Install Two (2) Corner Braces

Required parts for this procedure:

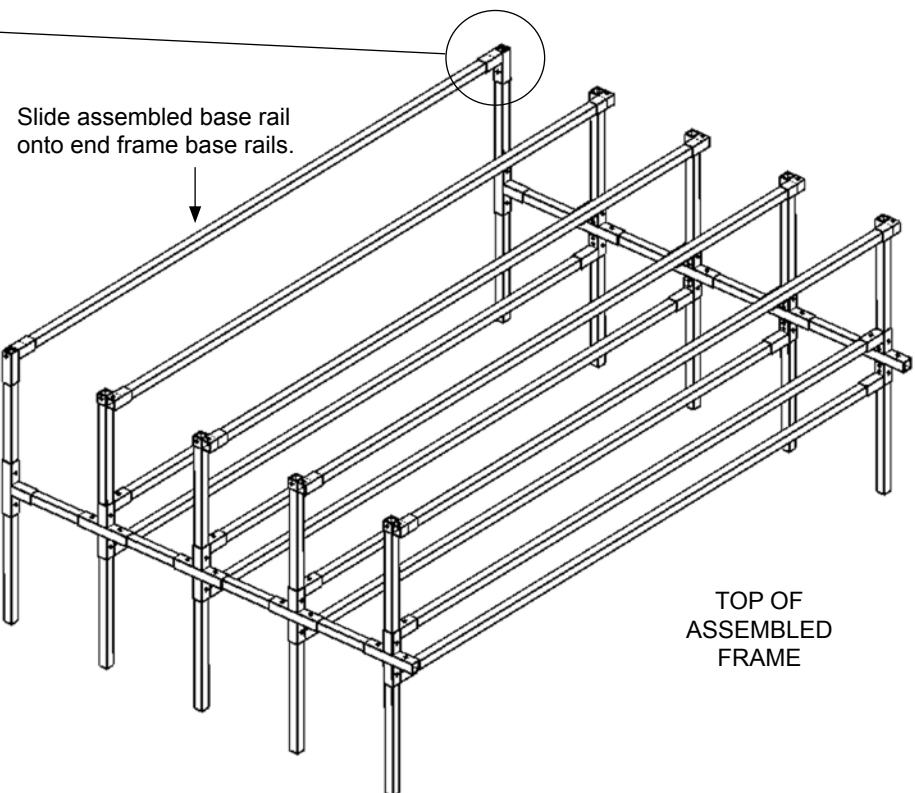
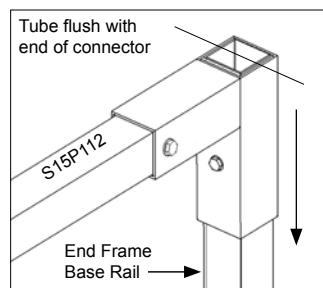
- (2) S15P112 Square Tubes (plain) for outer base rails and (4) 104625 2-Way Connectors
- (2) 110877C Corner Angle Brace
- FA4482B Tek Screws and 100441 Magnetic Nut Setter

Complete these steps:

1. Take two (2) 104625 2-way connectors and slide one onto each end of a S15P112 tube as shown. Assemble so an equal length of the 112" tube is inserted into each connector. **Assembled outer base rail length is 119 1/2" outside-to-outside.** Secure the connector to the tube using two Tek screws driven down through the top of the connector and into the tube. *Do not install Tek screws into a surface that will be on the underside of either base rail assembly.*
2. Slide the outer base rail assembly onto the ends of the end frame base rail until the connectors are flush with the end of the end frame base rail. Secure the connector to the end frame tube with Tek screws driven through the connector along the inside surface as shown.



**NOTE:** Dashed line shows the approximate end of the S15P112 tube. Actual position may vary slightly depending on overall length of the assembled base rail.



# 1

## ASSEMBLE MAIN FRAME: Assemble and Install the Two (2) Outer Base Tubes and Install Two (2) Corner Braces — continued

3. With assistance, tilt the frame assembly onto its base.

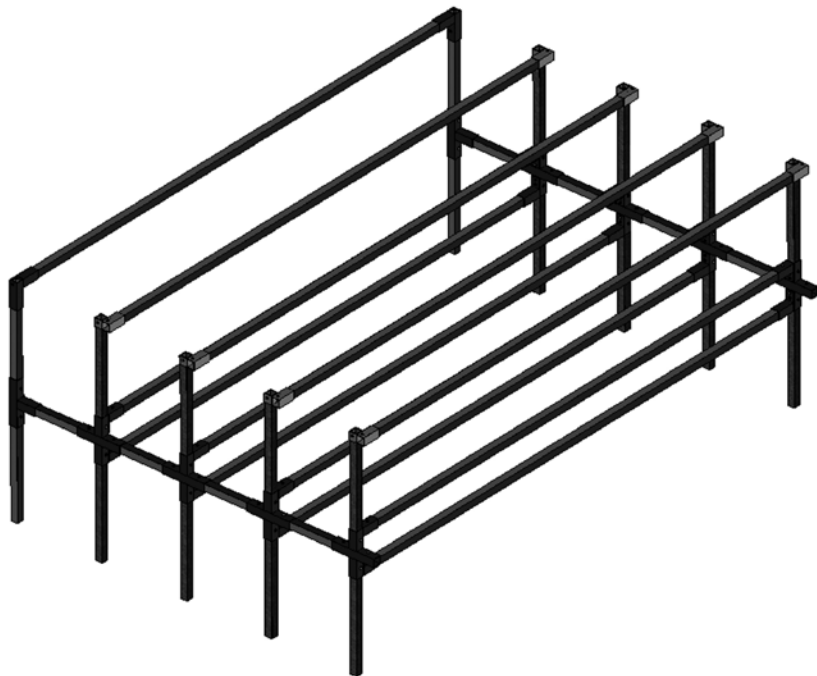
**CAUTION: FRAME IS HEAVY! ADDITIONAL HELP IS REQUIRED TO SET IT UPRIGHT. DO NOT ATTEMPT TO LIFT FRAME ALONE.**

4. Install the remaining outer base rail for the frame.

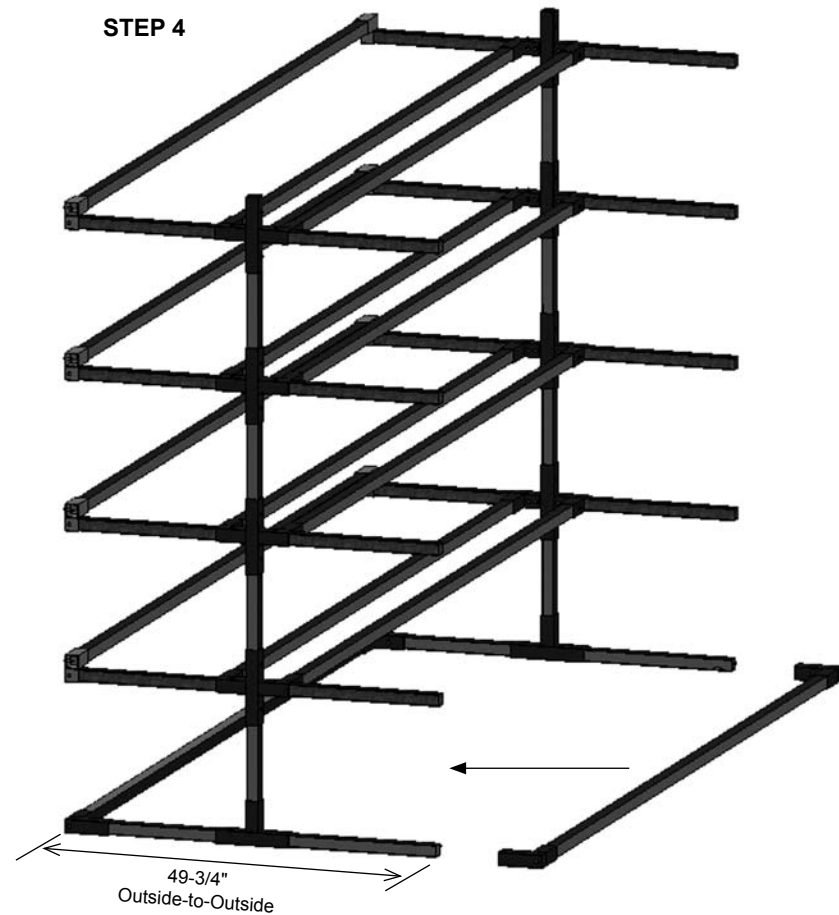
### STEP 3



FRAME IS HEAVY! DO NOT LIFT ALONE.  
ASSISTANCE IS REQUIRED!



### STEP 4

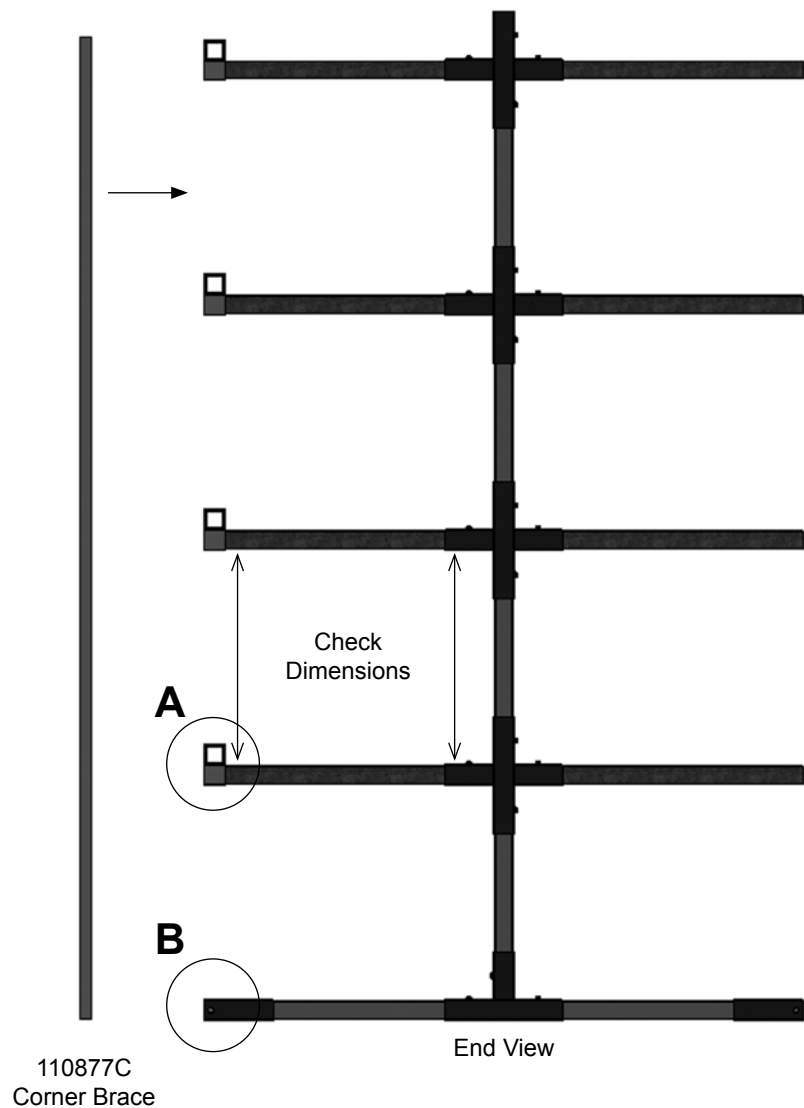


**NOTE:** Slide base rail assembly onto end frame tubes *until tubes are flush with the end of the connector*. Secure using Tek screws as previously shown. When installed, the outside-to-outside end frame dimension is 49-3/4" as shown above.

## 1

### ASSEMBLE MAIN FRAME: Assemble and Install the Two (2) Outer Base Tubes and Install Two (2) Corner Braces — continued

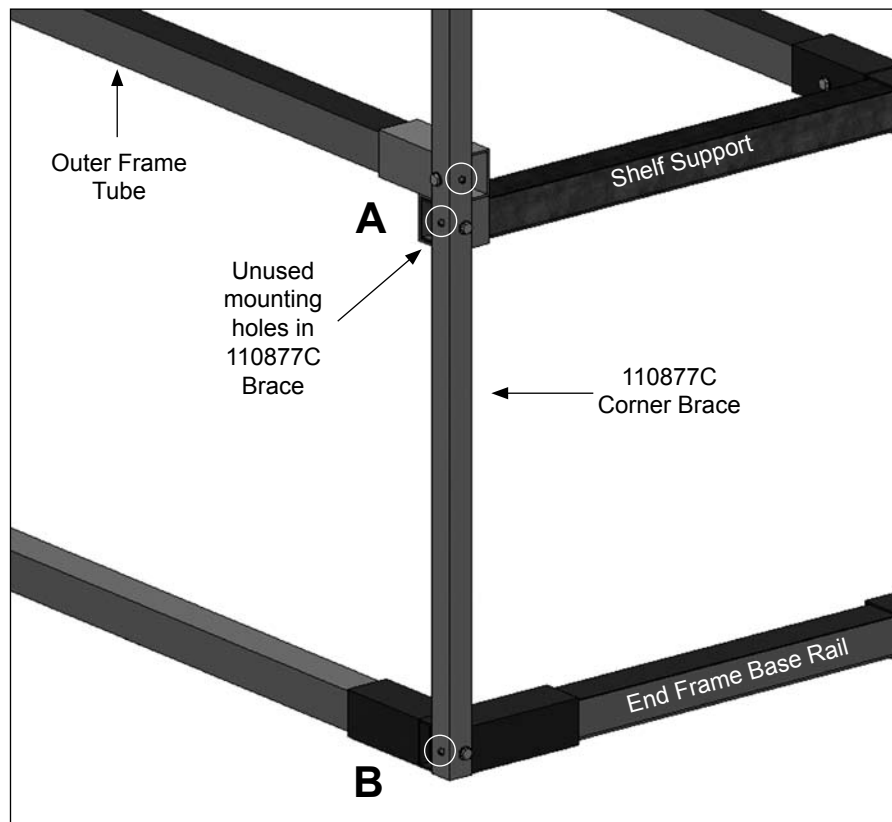
5. Take two (2) 110877C corner braces and attach these to the frame assembly using Tek screws as shown. Braces are installed tight to the 111485 connectors at each corner. *Remove and reposition Tek screws* that prevent the 110877C brace from an installation that is tight against the connectors.



**IMPORTANT:** When attaching the 110877C corner braces to the frame corners, verify the each shelf support is level before you secure using the Tek screws. Check dimensions or use a short level to set on the shelf supports. Have an assistant push the shelf support tube up or down until it is level and then secure the corner brace in place.

Position the end of the corner brace with the single pair of mounting holes at the bottom of the frame. See letter B below.

**Some holes of these universal braces are not used. See diagrams below and on the following page.**

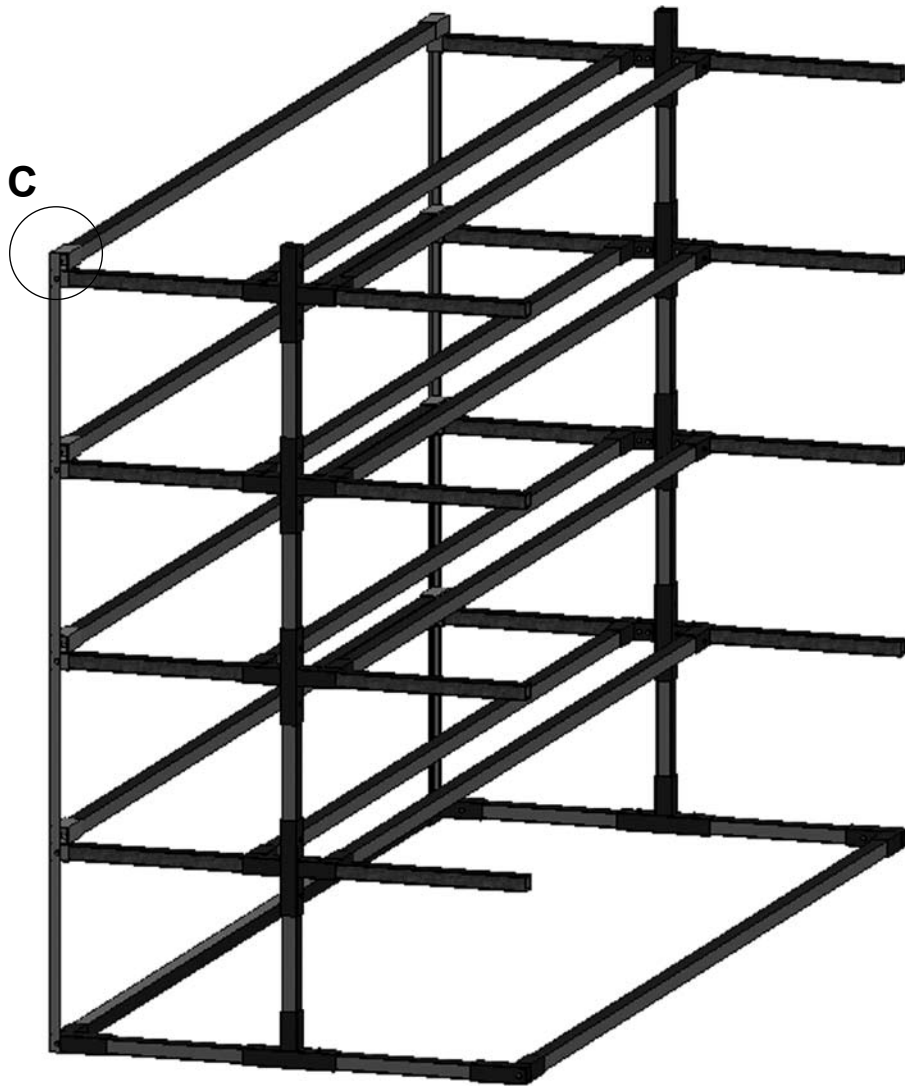




## 1

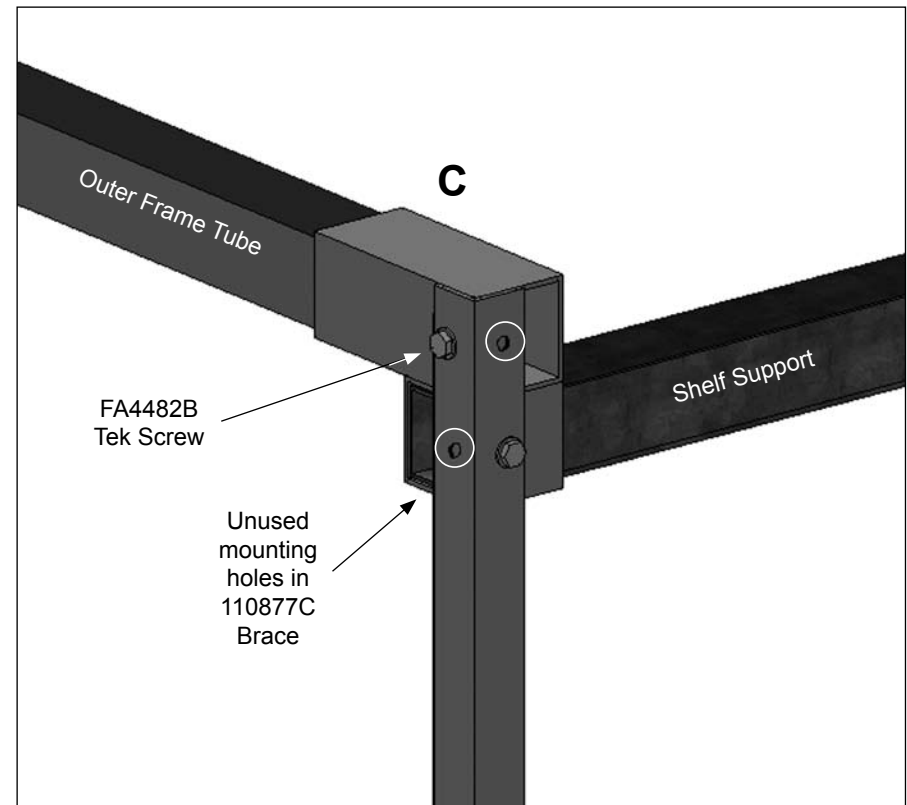
### ASSEMBLE MAIN FRAME: Assemble and Install the Two (2) Outer Base Tubes and Install Two (2) Corner Braces — continued

6. Recheck the frame to ensure all tubes and connectors are properly secured.
7. Continue by reading the information on this page and completing the procedures that follow in this guide.



**ATTENTION:** To this point, the frame should resemble the frame in the diagram at the left. All components have been installed *except* the outer frame tubes and corner braces along one side. For easier access to the inner frame tubes, these have been left to install until after the horizontal return channels and the vertical return channel have been assembled and installed.

Depending on preference, the remaining frame components can be installed now, or you can wait until after the return channels are installed.



# Assembly Instructions

## 2

### ASSEMBLE ALL 30" FODDER CHANNELS: 111066

Required parts:

- 111029 End Cap (w/outlet) and 111030 End Cap;  
111066 GT80 NFT Channels @ 30" long (each)
- WF6990 PVC Cement

Complete these steps:

1. Place one 30" channel (111066) on a flat surface for assembly. Cover the assembly surface if needed to protect it from the PVC glue.
2. Attach the plain end cap (no outlet–111030) to one end of the channel. *Coat all edges of the channel end with PVC glue before installing the cap.*
3. Move to the other end of the channel and install the 111029 end cap (with outlet). *Coat all edges of the channel end with PVC glue before installing the cap.*
4. Repeat Steps 1-3 for all remaining 30" channels.
5. Once all end caps are in place, carefully flip one 30" channel over so the bottom is facing up and the open top is down.
6. Take the PVC cement and secure the end caps to the 30" channel. Photos show securing the end cap with an outlet. Secure the plain end caps in the same manner.



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

**NOTE:** Apply the cement to the *outside of the channel assembly*. Seal all edges and seams of the end caps to prevent leaks. *Apply the cement to the inside of the channel only as needed to repair leaks.*

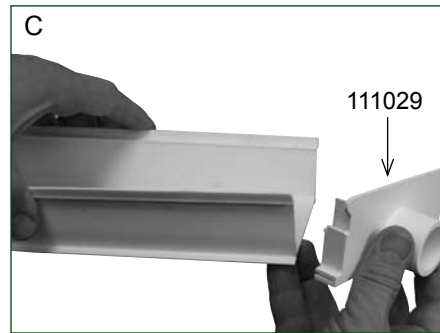
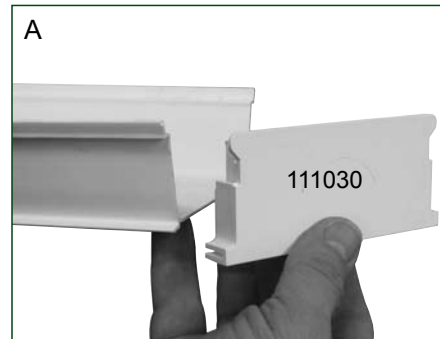
7. Repeat for all remaining 30" fodder channels.
8. Allow the cement to dry before moving the channels or testing the system. See the note to the right to test channels for leaks.

**NOTE:** Read the instructions on the PVC cement container for recommended drying times.

9. Continue with the assembly of the four (4) 111065 horizontal return channels.



TEST ONLY: DO NOT GLUE ELBOW TO THE END CAP!



**ATTENTION:** Coat the seams evenly with a thick layer of glue to coat all gaps. Once the glue has dried according to the directions on the PVC label, fill channel with water, set on a level, dry surface, and check for leaks. Reseal if necessary.

When checking for leaks, slide a 90° elbow onto the outlet end cap and turn the open end of the elbow to the 12 o'clock position, and fill the channel.



# Assembly Instructions

## 3

### ASSEMBLE THE HORIZONTAL RETURN CHANNELS: 111065

Required parts:

- 110824 End Cap (w/outlet) and 110825 End Cap
- 111065 GT50 Series NFT Channels @ 112" long (each)
- WF6990 PVC Cement

Complete these steps:

1. Take one 112" channel (111065) and attach the plain end cap (no outlet–110825) to one end. *Coat all edges of the channel end with PVC glue before installing the cap.*
2. Move to the other end of the channel and install the 110824 end cap (with outlet). *Coat all edges of the channel end with PVC glue before installing the cap.*
3. Once the end caps are installed, carefully flip the channel over so the bottom is facing up and the open top is down.
4. Take the PVC cement and secure the end caps to the 112" channel.



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

**NOTE:** Apply the cement to the *outside of the channel assembly*. Seal all edges and seams of the end caps to prevent leaks. *Apply the cement to the inside of the channel only as needed to repair leaks.*

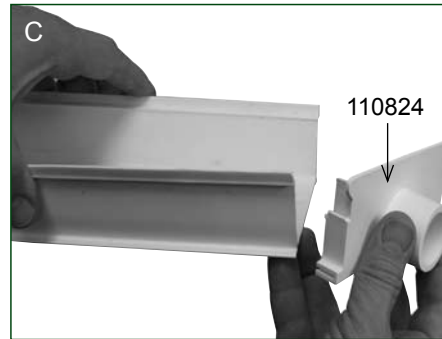
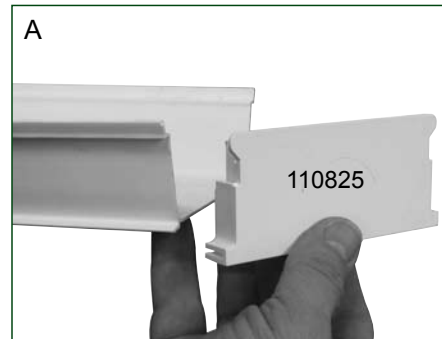
5. Repeat to assemble and seal the remaining 112" channels.
6. Allow the cement to dry before moving the channel or testing the system. See the note to the right to test channels for leaks.

**NOTE:** Read the instructions on the PVC cement container for recommended drying times.

7. Prepare the vertical water return channel (111064).



TEST ONLY: DO NOT GLUE ELBOW TO THE END CAP!



**ATTENTION:** Coat the seams evenly with a thick layer of glue to coat all gaps. Once the glue has dried according to the directions on the PVC label, fill channel with water, set on a level, dry surface, and check for leaks. Reseal if necessary.

When checking for leaks, slide a 90° elbow onto the outlet end cap and turn the open end of the elbow to the 12 o'clock position, and fill the channel.

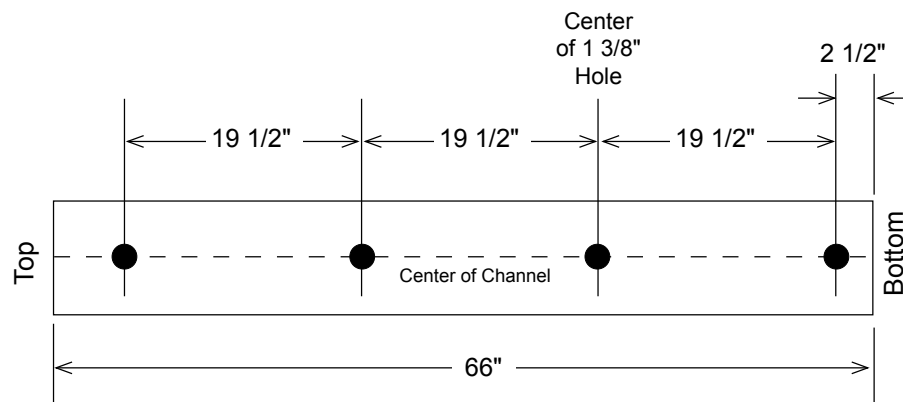


## 4

### PREPARE THE 66" VERTICAL RETURN CHANNEL: 111064

Required tools and parts:

- Drill and 1 3/8" Hole Saw Bit
- Tape Measure, Marker, and Chalk Line
- 111064 GT50 Series NFT Channel @ 66" long
- 111062 GT50 Series NFT Lid @ 72" long (no holes)
- 111069 Drain Sock



Complete these steps:

1. Take the 66" channel (111064), flip it topside down on a flat surface, and mark the four (4) hole locations on the bottom of the channel. Use the diagram above to correctly mark the locations.

**NOTE:** Find the *center of the channel bottom* at each end and snap a chalk line from end-to-end. Mark the hole positions on this center line.

2. Using the 1 3/8" hole saw, drill the four (4) holes through the bottom of the 110064 channel. Clean the channel to remove shavings.

**ATTENTION:** Actual channel size/width may differ from what is shown.

Verify that you are using the 66" channel that shipped with your fodder system.



Find center of channel bottom.



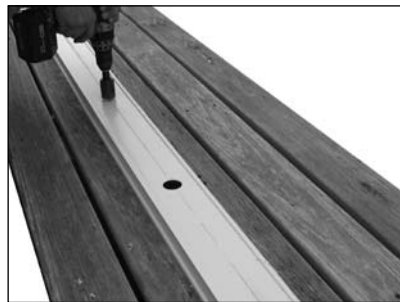
Snap chalk line end-to-end.



Mark hole locations.



Drill holes in channel bottom.



Keep hole saw centered on line.



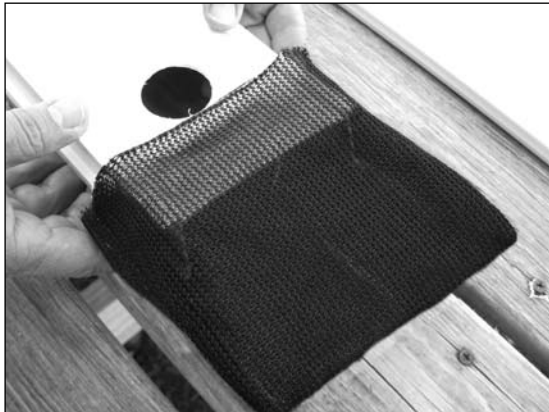
Clean channel.



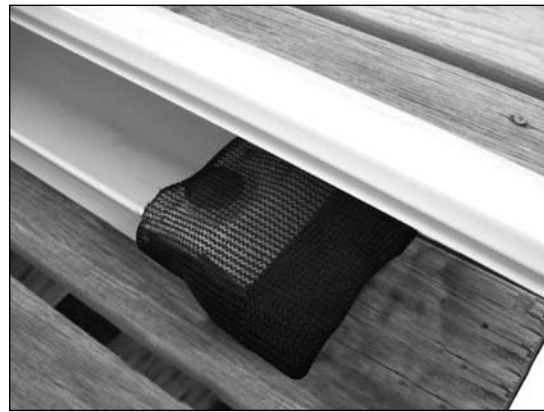
# 4

### PREPARE THE 66" VERTICAL RETURN CHANNEL: 111064—continue

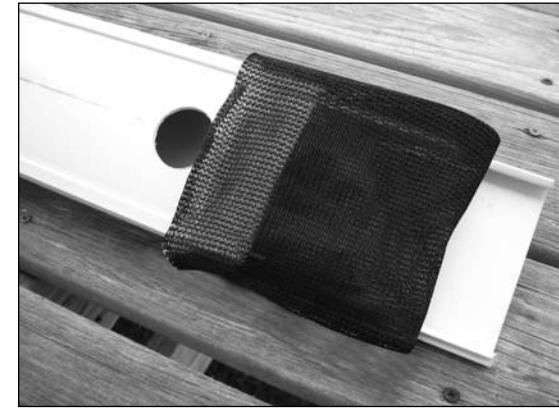
3. Place the channel on a flat surface with the open side facing up. At the end of the channel where the hole is 2 1/2" from the end, take the 111069 drain sock and slide it onto the channel approximately 2". **Do not slide it over the 1 3/8" hole drilled in the channel earlier. This is the bottom end of the channel.**
4. Carefully align the 111062 lid with the end of the channel *opposite the drain sock* and snap the lid onto the channel to lock the drain sock in place. **The lid will extend 6" beyond the drain sock end of the channel and serve as a back splash once the channel and reservoir are in place.**
5. Continue by attaching the vertical channel to the assembled frame.



**STEP 3:** Place channel on bench—bottom side up—to install drain sock. Slide drain sock into place.



**STEP 4:** Flip channel over, align lid flush with the channel end opposite the drain sock.



Snap channel lid into place to secure the drain sock in place. Lid will extend approximately 6" beyond the end of the channel as shown.

## 5

### ATTACH VERTICAL RETURN CHANNEL TO THE FRAME

Required parts:

- Assembled frame from Procedure 1.
- Prepared 111064 Vertical Return Channel with installed lid and drain sock from Procedure 4.
- 111067 1" Strap with D-Rings (2)
- Assistant is required for easier installation.

Complete these steps:

1. Move the frame to the location where it will be used.

**ATTENTION:** Frame requires a level site! Use a level or similar means to level the frame. In addition, you must allow access to both sides and all levels of the frame to harvest the fodder and to change the 30" fodder channels during the growing cycle. Allow room for adequate light and to comfortably work around the frame.

2. After setting the frame, determine at which end the 100 gallon reservoir will be located. *This will be the end that the horizontal return channels drain toward and the end where the vertical return channel will be attached to the frame.* Set the reservoir in place.

**ATTENTION:** Position the reservoir at an end that is easily accessible for cleaning and maintenance. Level the reservoir in all directions using blocks if needed. Position the reservoir so that the end of the vertical return channel (111064) drains into it.

Also, position the reservoir so the end that the water drains toward in the tank is at the vertical return channel.

For this example, vertical channel is attached at this end.

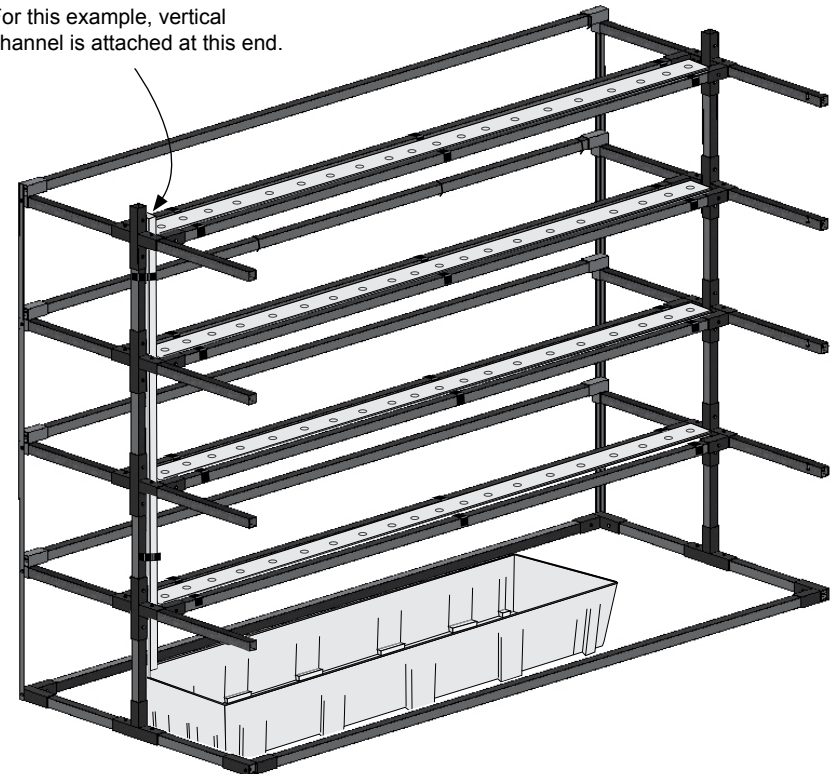


Diagram shows the horizontal drain channels installed. Vertical channel is also shown attached to the frame at the end where the reservoir is located.



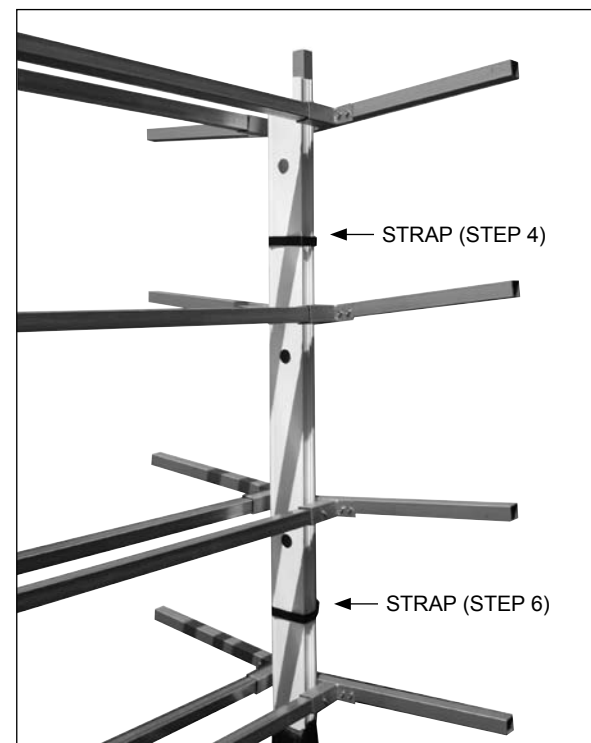
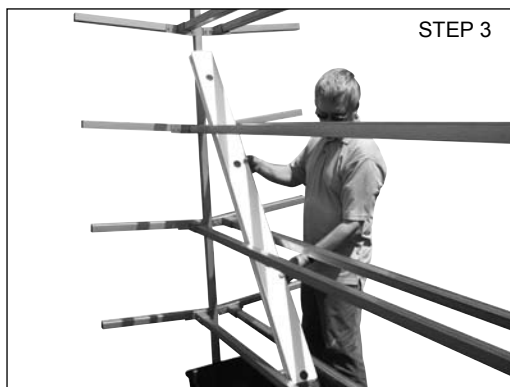
## 5

### ATTACH VERTICAL RETURN CHANNEL TO THE FRAME—continued

3. Take the prepared vertical return channel, carefully guide it between the installed inner frame tubes, and set the lower end—which includes the installed drain sock—into the reservoir. End of channel will be above the reservoir; end of channel lid and sock will be inside the reservoir. See photo below.

**NOTE:** Face the drilled 1 3/8" holes in the vertical return channel toward the inside of the frame assembly.

4. Secure the vertical return channel to the frame using one (1) 111067 1" strap with D-rings. *Position strap between the first and second shelf from the top.*



5. Tighten strap until snug to keep the channel from sliding down. Verify that the *drain sock* and lower end of the *channel lid* are inside and against the reservoir. See photo below.
6. Take another 111067 strap, wrap it around the end frame center vertical tube and vertical return channel *between the first and second shelf from the bottom*, and tighten until snug.
7. Continue by installing the horizontal return channels prepared in Procedure 3.



**STEP 3:** Photo shows the lower end of the vertical return channel with screen. Channel is above the lip of reservoir; lid with screen are inside reservoir.

Actual reservoir and frame may differ.

ACTUAL FRAME MAY DIFFER FROM WHAT IS SHOWN.

## 6

### INSTALL HORIZONTAL RETURN CHANNELS

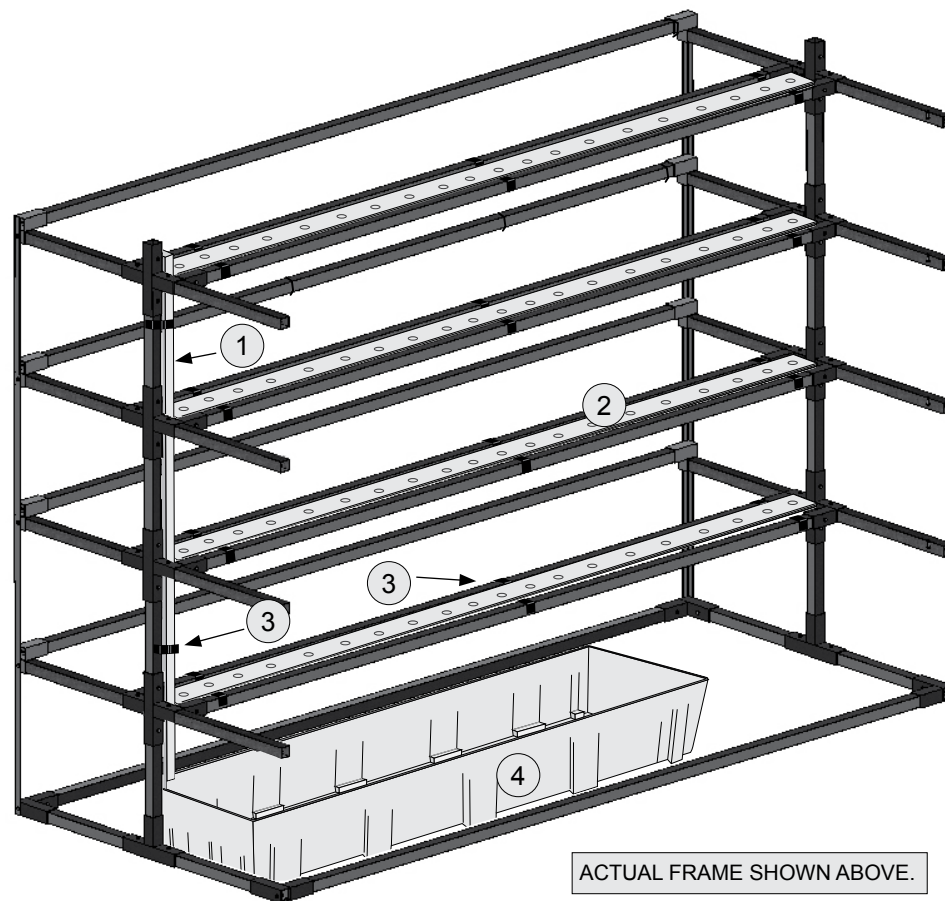
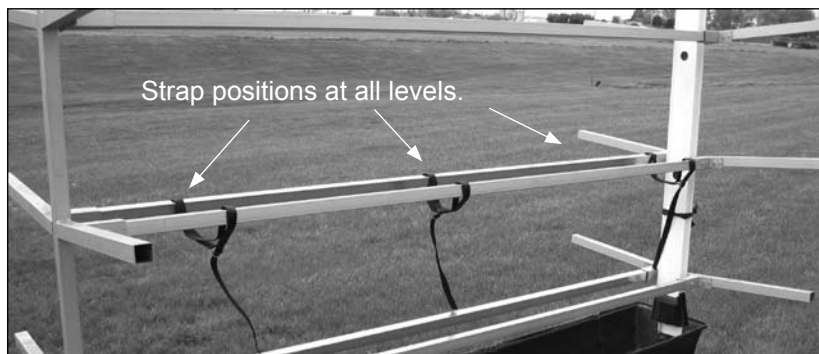
Required parts:

- Prepared 111065 Channels (112" long) from Procedure 3.
- 111063 GT50 Series NFT Lids @ 112" long (each)
- 111067 1" Strap with D-Rings (12)
- Assistant is required for easier installation.

Complete these steps:

1. Move to the frame and wrap a 111067 1" strap around each pair of inner frame tubes at each of the four (4) levels. Loosely install the straps at each end as shown.
2. Next install a middle strap between each end strap at each level.

**NOTE:** Straps should remain loose. All straps will be adjusted once the horizontal channels are set into position. (Sample frame shown below.)



ACTUAL FRAME SHOWN ABOVE.

Identification Table	
1	Vertical Return Channel
2	Horizontal Return Channel
3	111067 Strap
4	100 Gallon Reservoir

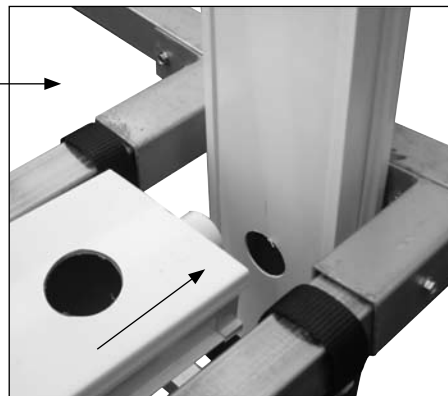
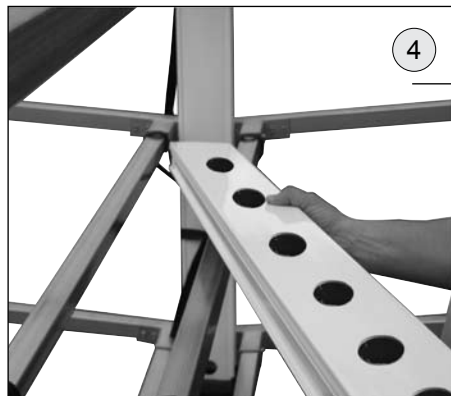
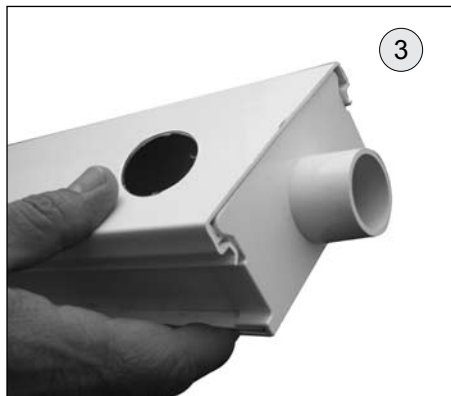
DO NOT CLIMB ON THE FRAME ASSEMBLY AT ANYTIME!

## 6

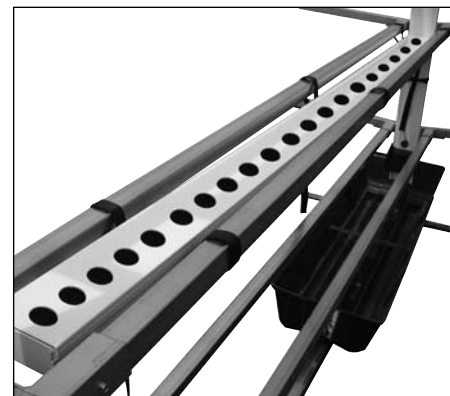
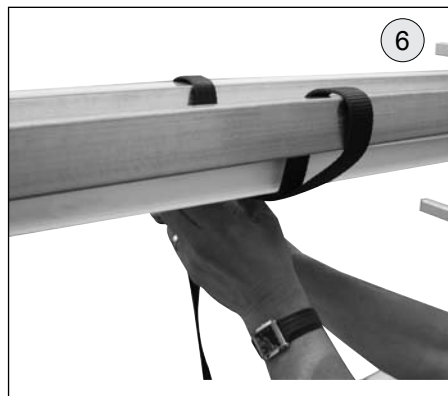
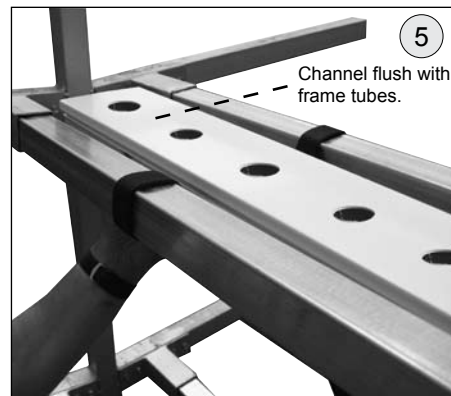
### INSTALL HORIZONTAL RETURN CHANNELS

3. Snap or slide a 111063 lid onto each of the 111065 channels. Lid will be flush with each end of the channel when properly installed.
4. With assistance, take one prepared 111065 channel and set it in position on the straps between the pair of inner frame tubes at the **second level from the top of the frame**. Position the end cap with the outlet toward the vertical return channel attached to the frame (Procedure 5). Guide the outlet collar of the end cap into the hole in the vertical return channel until the end cap is tight against the vertical channel.
5. Move to the end strap **opposite the vertical return channel** and adjust the strap so that the top of the horizontal channel is flush with the top of the inner frame tubes. Verify that the end cap collar stays inside the vertical channel.
6. Move back to the strap **at the vertical channel end** and tighten that strap to support the horizontal channel end. Finally, move to the middle position and tighten that strap to support the middle of the channel.

**ATTENTION:** When the straps are adjusted correctly, the horizontal channel will slope from the high end down to the vertical return channel. Adjust straps and vertical channel as needed to achieve an even slope. **REMEMBER:** Set the high end of the channel flush with the top of the inner frame tubes.



7. Repeat the steps to install all remaining horizontal return channels.
8. Once all channels are installed and straps are adjusted, complete the frame assembly by installing the outer frame tubes.



## 7

### INSTALL REMAINING OUTER FRAME TUBES AND 110877C CORNER BRACES

If you did not install these components at the end of Procedure 1 to allow for easier access to the inner tubes, install them now to complete the frame assembly. Refer to the pages noted below for reference to complete this installation.

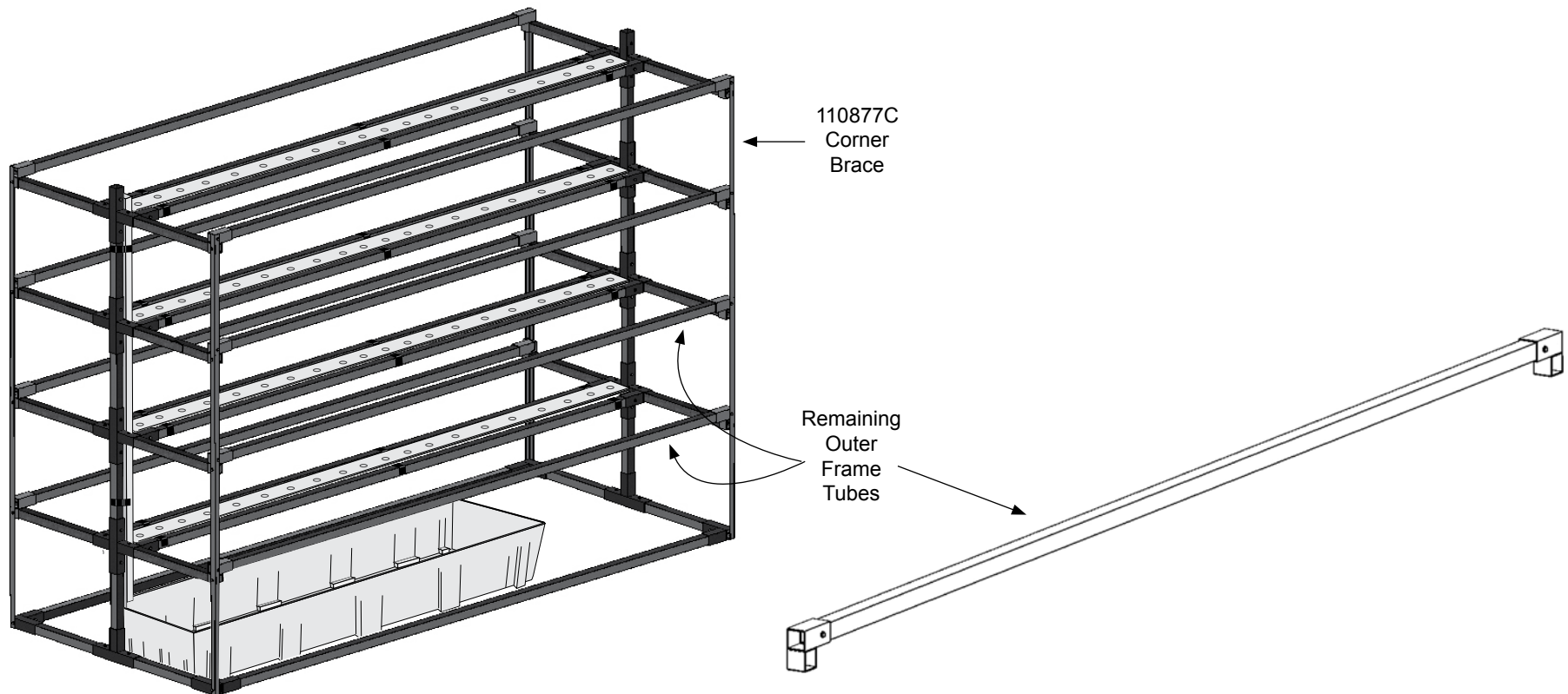
Required parts:

- Remaining Assembled Outer Frame Tubes from Procedure 1: See Pages 10-11.
- Remaining 110877C Corner Braces: See Pages 14-15
- FA4482B Tek Screws and 100441 driver

Complete these steps as needed:

1. Take the remaining four (4) outer frame tube assemblies from Procedure 1 (pages 10-11) and attach each to the main frame.
2. Take the remaining two (2) 110877C corner braces from Procedure 1 (pages 14-15) and attach them to the remaining corners of the frame.

**ATTENTION;** RESERVOIR SHOWN IN SOME PHOTOS MAY DIFFER FROM THE RESERVOIR THAT SHIPPED WITH THE FODDER SYSTEM.



## 8

### CUT THE WATER SUPPLY TUBING: 110741 and 110408

Using the tables (right) and the diagrams on the following pages, cut the required tubing for the water supply plumbing for the fodder system.

Required tools and parts:

- 110741 3/4" PE Tubing
- 109170 Plastic Pipe and Tube Cutter
- Tape Measure and Marker (or Pencil) — optional

110741 Tube Length	Number of Tubes Needed
3"	4
11 3/4"	16
18 1/4"	3
120"	8

110408 Tube Length	Number of Tubes Needed
17"	160

Complete these steps:

1. Take the roll of 110741 PE tubing (3/4") and tape measure.
2. Using the table (above right—upper), cut the required lengths of tubing using the 109170 tube cutter and set these aside.

**NOTE:** Have an assistant help hold the tubing for best results. Do not mix the different lengths. Keep these separate for easier assembly.

3. Next, take the 110408 tubing (white) and cut those supply lines. See the table (above right—lower). Set these tubes aside to be used later.
4. Continue by creating the different water supply assemblies using the 110741 tubing.

**INSTALLATION HINT:** Connecting the fittings and in-line valve to the 3/4" tubing is accomplished more easily when the tubing is flexible. If you have difficulty with the fitting and hose assembly, **heat the tube** using one of these methods:

- Soften the tubing using hot water;
- Carefully heat the tube end using a small lighter;
- Heat the tube end using a heat gun or hair dryer.

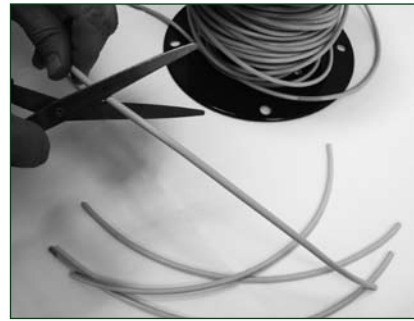
**NOTE: DO NOT OVERHEAT THE TUBING. TUBING MAY MELT/KINK WHEN IT IS TOO HOT. PRACTICE ON AN EXTRA PIECE OF TUBING TO DETERMINE HOW MUCH HEAT IS NEEDED TO INSTALL THE FITTINGS AND VALVES.**



Measure the required length. See the chart above.



Cut the tubing and set the lengths aside. Do not mix.



Cut 17" supply tubes from the 110408 poly tubing roll.



## 9

### CREATE THE RISER AND CHANNEL ROW ASSEMBLIES

Required parts:

- Different Tubing Lengths (from previous procedure): Four at 3", three at 18 1/4", and eight at 120".
- 110729 90° Elbow Fitting and 110730 Tee Fitting
- 110731 End Plug (8)
- Tool or means to heat the tubing. (May not be needed.)

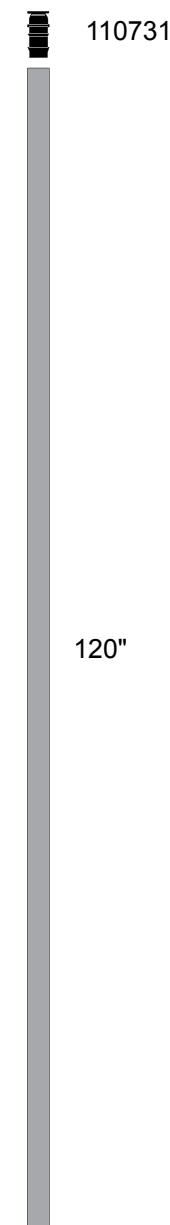
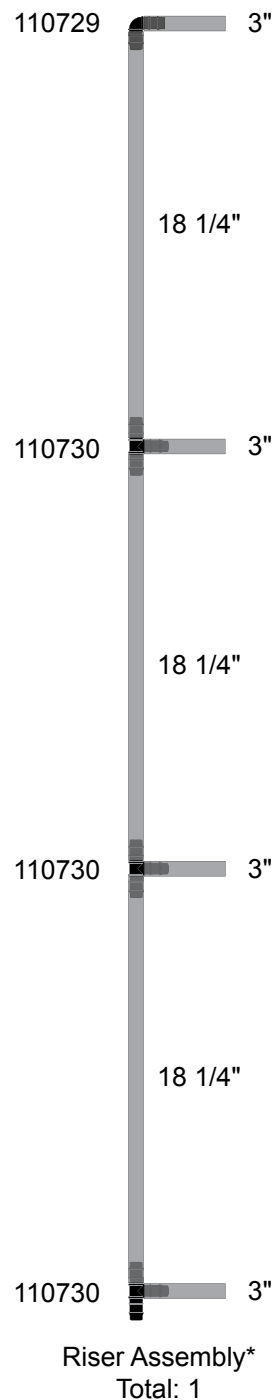
Complete these steps to create the different plumbing assemblies for the water supply:

1. Using the Riser Assembly diagram to the right, create one (1) Riser Assembly using the following parts: four (4) tubes at 3" each, three (3) tubes at 18 1/4" each, three (3) 110730 Tee fittings, and one (1) 110729 90° fitting.
2. Using the Channel Row Assembly diagram, create eight (8) Channel Row Assemblies using these parts: eight (8) tubes at 120" each and eight (8) 110731 End Plugs.
3. Continue by creating the four (4) Left and four (4) Right Arm Assemblies as shown on the next page.

**INSTALLATION HINT:** Connecting the fittings and in-line valve to the 3/4" tubing is accomplished more easily when the tubing is flexible. If you have difficulty with the fitting and hose assembly, **heat the tube** using one of these methods:

- Soften the tubing using hot water;
- Carefully heat the tube end using a small lighter;
- Heat the tube end using a heat gun or hair dryer.

**NOTE: DO NOT OVERHEAT THE TUBING. TUBING MAY MELT/KINK WHEN IT IS TOO HOT. PRACTICE ON AN EXTRA PIECE OF TUBING TO DETERMINE HOW MUCH HEAT IS NEEDED TO INSTALL THE FITTINGS AND VALVES.**



\*Diagrams are not to scale.



## Assembly Instructions

# 10

### CREATE THE LEFT AND RIGHT ARM ASSEMBLIES

Required parts:

- Tubing Lengths (from previous procedure): sixteen (16) at 11 3/4" each.
- 110729 90° Elbow Fitting and 110730 Tee Fitting
- AC2804 3/4" In-line Valve (8)
- Tool or means to heat the tubing. (Recommended.)

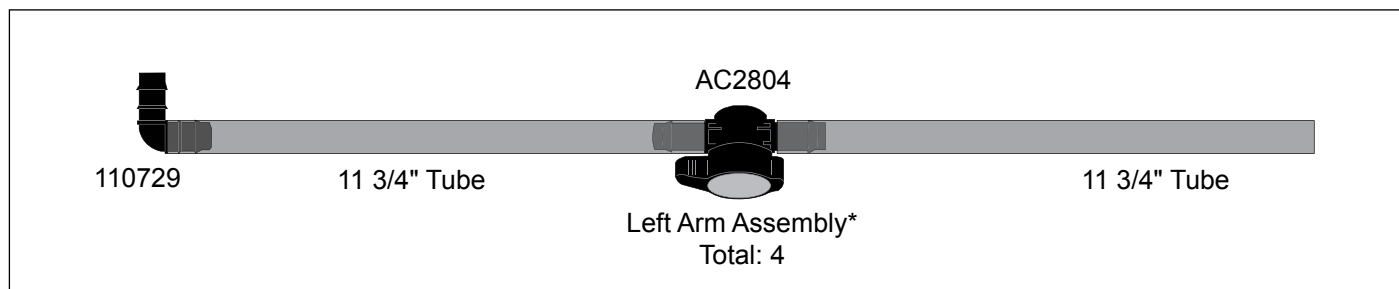
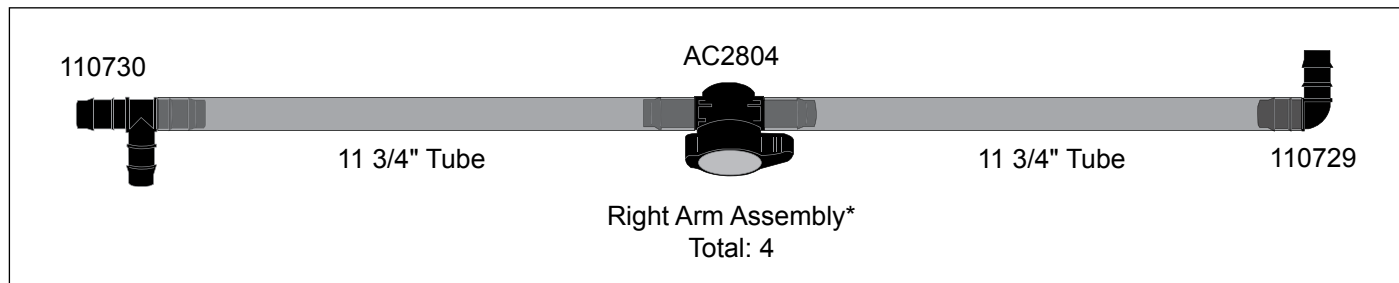
**INSTALLATION HINT:** Connecting the fittings and in-line valve to the 3/4" tubing is accomplished more easily when the tubing is flexible. If you have difficulty with the fitting and hose assembly, **heat the tube** using one of these methods:

- Soften the tubing using hot water;
- Carefully heat the tube end using a small lighter;
- Heat the tube end using a heat gun or hair dryer.

**NOTE: DO NOT OVERHEAT THE TUBING. TUBING MAY MELT/KINK WHEN IT IS TOO HOT. PRACTICE ON AN EXTRA PIECE OF TUBING TO DETERMINE HOW MUCH HEAT IS NEEDED TO INSTALL THE FITTINGS AND VALVES.**

Complete these steps to create the different plumbing assemblies for the water supply:

1. Using the Right Arm Assembly diagram below, create four (4) Right Arm Assemblies using the following parts: eight (8) tubes at 11 3/4" each, one (1) 110730 Tee fitting, one (1) AC2804 3/4" in-line valve, and one (1) 110729 90° fitting.
2. Using the Left Arm Assembly diagram below, create four (4) Left Arm Assemblies using the following parts: eight (8) tubes at 11 3/4" each, one (1) AC2804 3/4" in-line valve, and one (1) 110729 90° fitting.
3. Continue by attaching the water supply assemblies to the frame.



\*Diagrams are not to scale.

## 11

### ATTACH WATER SUPPLY ASSEMBLIES TO THE FRAME

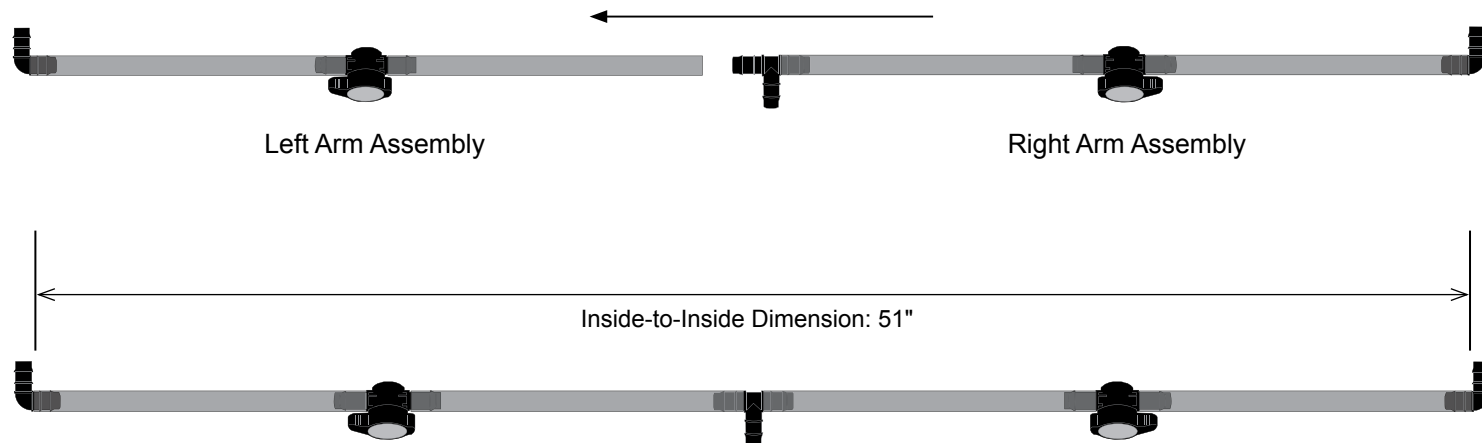
Required parts and tools:

- Assembled Frame
- All Water Assemblies from Procedures 9 and 10
- FAPB16 Bag of Nylon Cable Ties and tool to cut ties if desired.
- Tool or means to heat tube ends to connect plumbing. (May not be needed.)

Complete these steps to complete one water supply assembly and attach it to the frame.

1. Take one (1) Left Arm and one (1) Right Arm assembly and connect them. Verify that the in-line valves and 90° elbows are aligned as shown.

**NOTE:** For best results, review the diagrams in the Quick Start section to identify supply assembly positions. Create one assemble and fit it to the frame to verify that it can be installed as needed. Make minor adjustments to the remaining supply tube components to achieve the desired fit if desired.



2. Repeat Step 1 to create the remaining three (3) water supply assemblies. All assemblies should be approximately the same length when fully assembled.

## 11

### ATTACH WATER SUPPLY ASSEMBLIES TO THE FRAME—continued

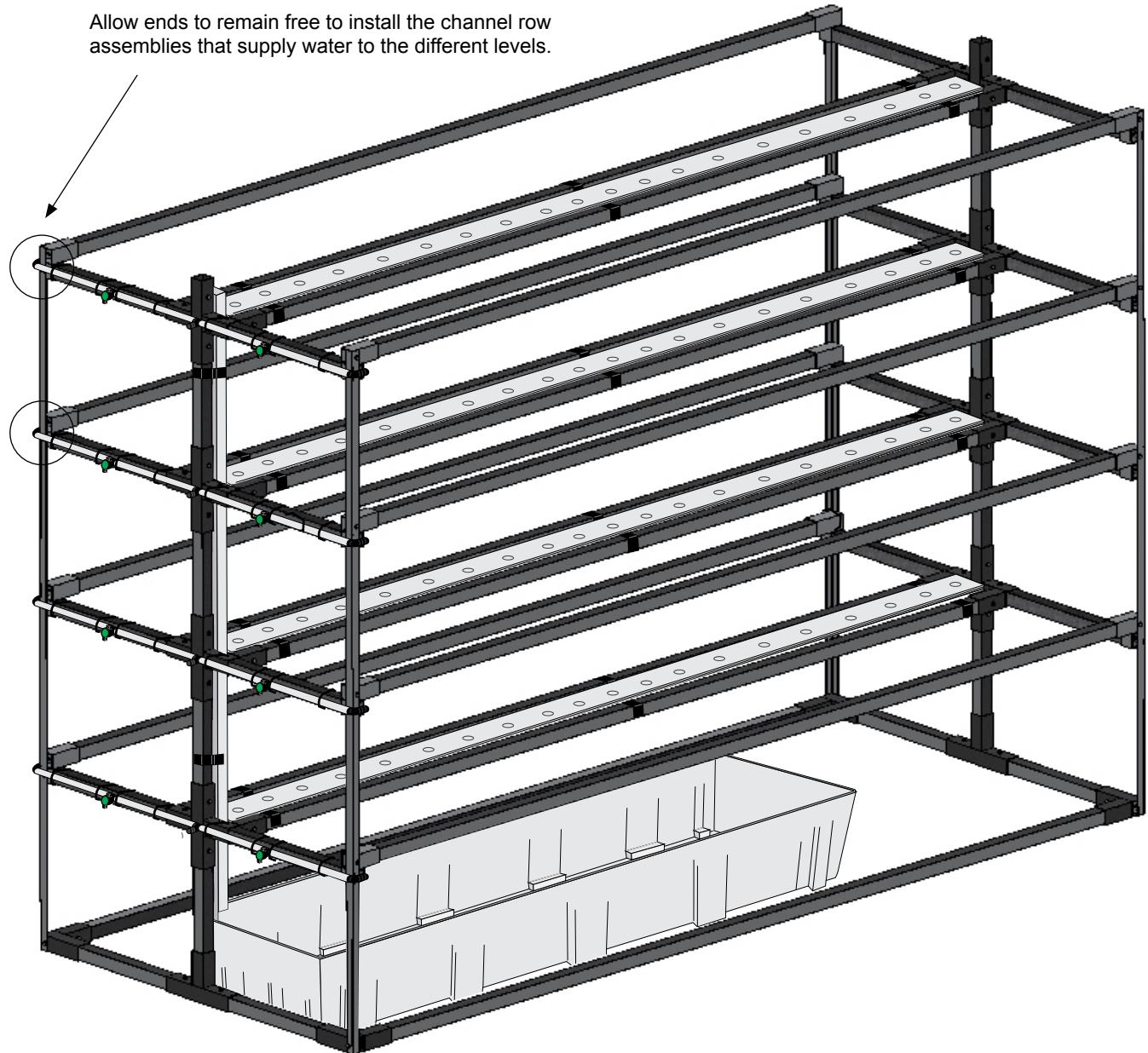
3. With assistance, take one of the assemblies and secure it to the frame at the end where the reservoir is located. Use nylon ties positioned as shown on this page and the next to secure the tubing. Position the ties around the tee fittings at this time.

**The ends of the arm assembly should remain free to install the channel row assemblies.**

**NOTE:** Nylon ties should be tight just enough to hold the tube assembly in place on the frame tree. **DO NOT OVERTIGHTEN THE NYLON TIES. DO NOT CRUSH THE TUBING.**

4. Repeat Step 3 to attach the remaining Left/Right Arm Assemblies to the frame.

Allow ends to remain free to install the channel row assemblies that supply water to the different levels.

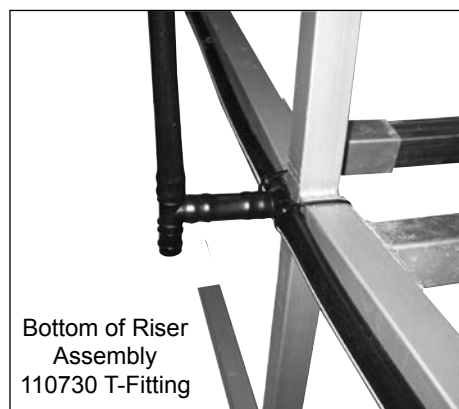
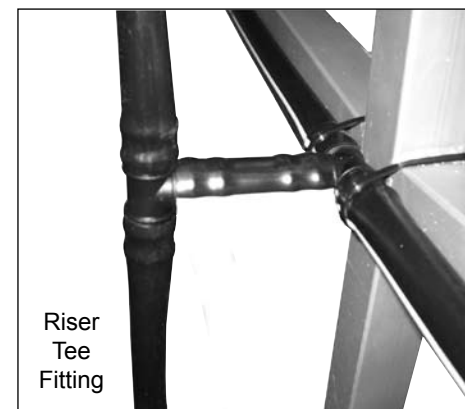
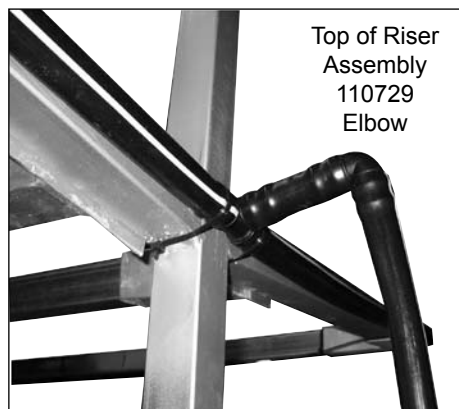
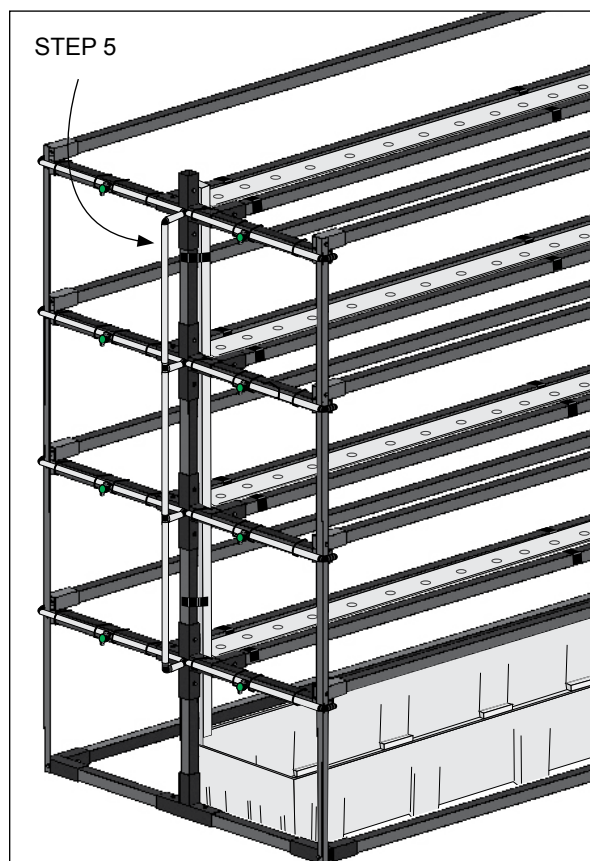


Attach all Left/Right Arm Assemblies to the frame using nylon ties as shown.

## 11

### ATTACH WATER SUPPLY ASSEMBLIES TO THE FRAME—continued

- Next, connect the Riser Assembly to the Left/Right Arm Assemblies. **Position the 110729 (90°) elbow of the Riser Assembly at the top and the 110730 tee fitting at the bottom.**
- Finally, attach the eight (8) Channel Row Assemblies to the outer frame tubes using evenly spaced nylon ties DO NOT OVERTIGHTEN THE NYLON TIES. When installed correctly, ties should not distort the shape of the tubing. Trim nylon ties if desired. Count and distribute the ties evenly when securing the assemblies. Install the ties around the tee fittings when possible for best results.
- Continue by installing the 30" fodder channels.



Channel Row Assembly attached to the outer frame tube. Actual frame may differ.

## 12

### PREPARE AND INSTALL THE 30" FODDER CHANNELS

Required tools and parts:

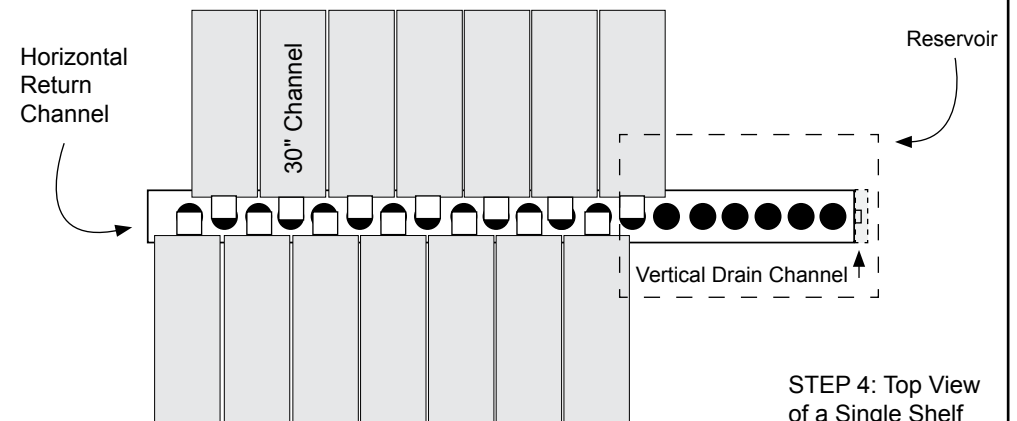
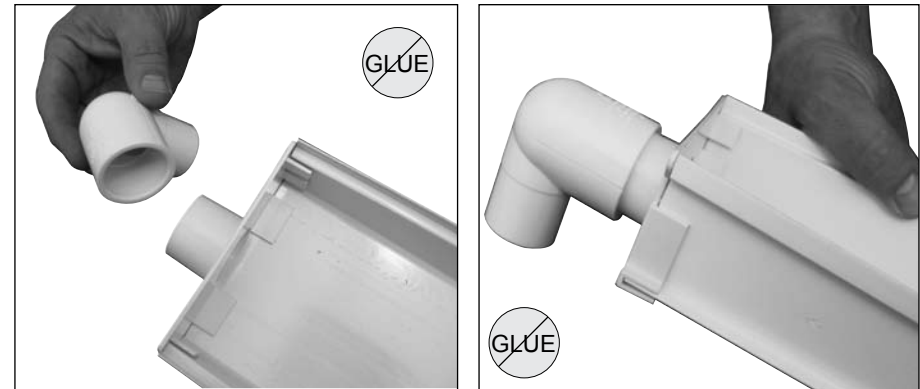
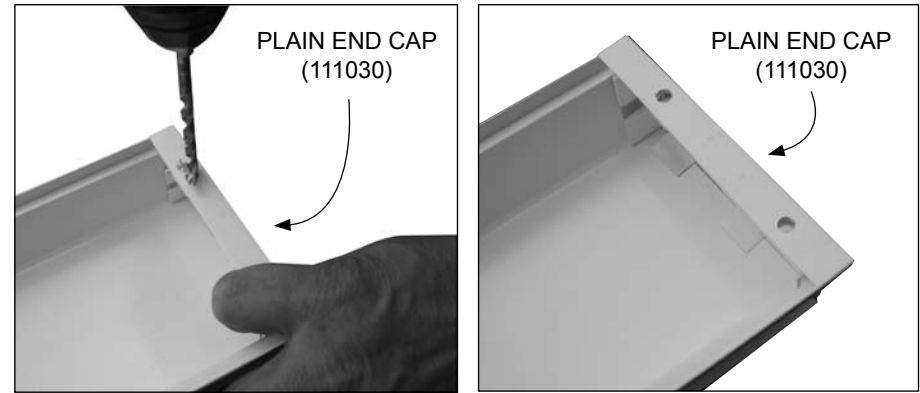
- Drill and 3/16" or 13/64" drill bit
- 109170 tool to cut PVC pipe for drain elbow extensions
- Tape Measure and Marker
- All 30" Fodder Channels prepared in Procedure 2
- WF6682 90° Elbows and WF1570 90° Elbows
- WF4135 1" PVC Pipe

Complete these steps:

1. Using the drill and 3/16" bit, drill two (2) holes in each 30" fodder channel in the locations shown in the photos.
2. Clean the shavings from the fodder channels. Set 10 of the 30" channels aside. These are the seed starter channels that are rotated into the grow cycle once the system is fully operational.
3. Next, take the 56 WF6682 elbows and attach them to the end cap of 56 fodder channels. **DO NOT GLUE THE ELBOWS TO THE END CAPS. YOU MUST BE ABLE TO REMOVE ELBOWS TO USE THE ADDITIONAL 10 FODDER CHANNELS.**

**NOTE:** If the elbows are in place from the water test, turn them so the opening is pointing down. There are two different elbow types. Read the remainder of this procedure to learn where to position the channels with the WF1570 elbows.

4. Beginning at the end of the frame **opposite the reservoir**, set 14 channels on each shelf—seven (7) per side. Be sure to insert the end of each WF6682 elbow into a hole in the lid of the horizontal return channel. There will be six (6) holes open on each level at the reservoir end of the frame. These are reserved for the WF1570 elbows with an extension.



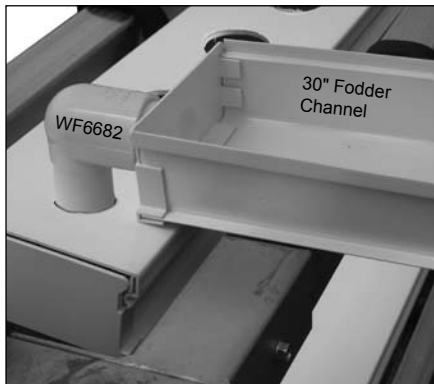
## 12

### PREPARE AND INSTALL THE 30" FODDER CHANNELS—continued

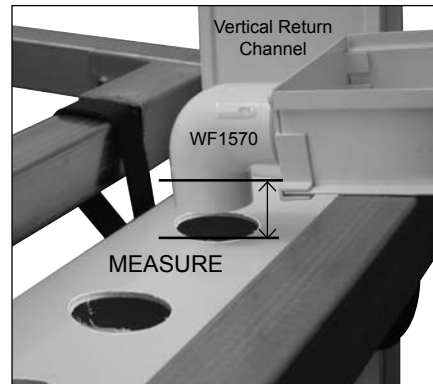
5. Take the 24 WF1570 90° elbows and attach these to 24 fodder channels. Consult the photos on the previous page if needed.
6. Set one channel in position at the reservoir end of the frame and measure the distance between the outlet end of the WF1570 elbow and the hole in the horizontal return channel lid. Use this dimension as a guide when cutting the PVC pipe.
7. Cut a section of 1" PVC pipe that will direct the water into the return channel.

**NOTE:** Allow an extra 1/2" to 1" to be inserted into the elbow for installation and so the extension can be inserted into the hole in the lid. Do not cut the pipe too long or it may bottom out in the horizontal return channel. Cut only what is needed to allow proper drainage of the fodder channels into the horizontal return channels. There are 24 channels in all **that will need this PVC extension.**

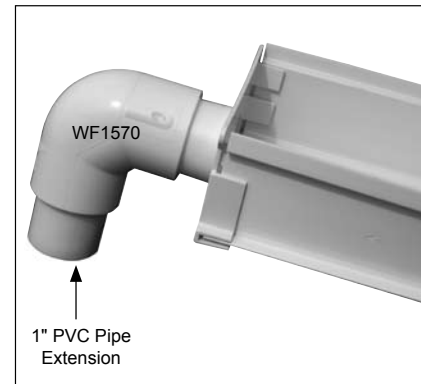
8. Add the extension to the fodder channel elbow and set the channel in place on the frame.



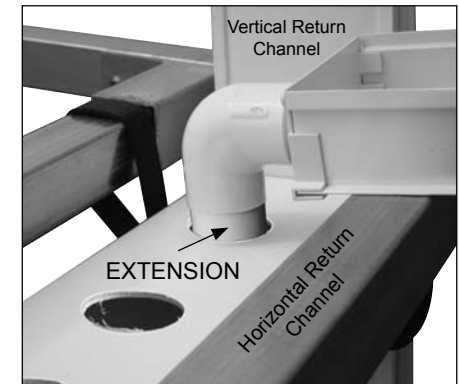
**STEP 4:** Slide all 30" fodder channels equipped with the WF6682 elbow into place on the frame. The WF6682 elbows do not require the 1" PVC pipe extensions described in the following steps.



**STEP 6:** Set one 30" channel equipped with a WF1570 elbow on the frame and measure to determine length of PVC tube extension. Begin at the position closest to the vertical return channel.



**STEP 7:** Cut a section of 1" PVC pipe and attach it to the WF1570 elbow.



**STEP 8:** Set the channel on the frame and insert extension pipe into return channel lid.

9. Repeat this procedure to add an extension to the remaining fodder channels. Once all extensions are in place and the all channels are on the fodder frame, install the 111044 5mm tee fittings as described in the next procedure.



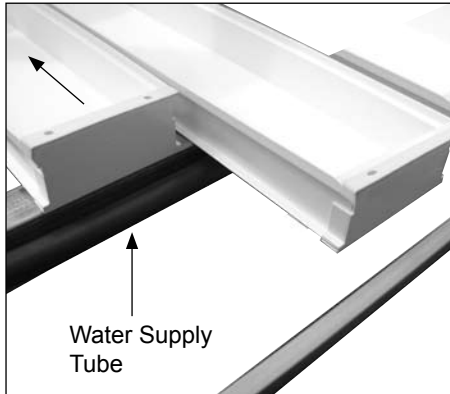
## 13

### INSTALL THE 111044 TEE FITTINGS AND CONNECT POLY TUBES

Required tools and parts:

- Adjustable pliers to install the 111044 Tee Fittings
- 110743 Punch
- 111044 5mm Tee

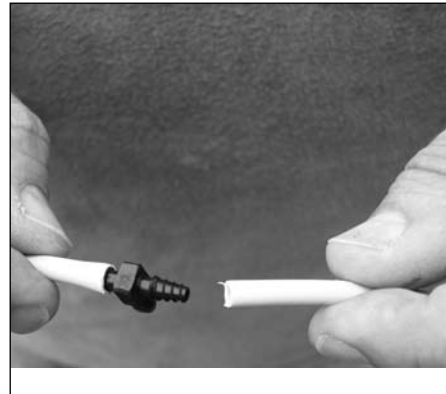
**ATTENTION:** AFTER CONNECTING THE POLY TUBES TO THE TEE FITTINGS, TRIM THE FREE END OF EACH TUBE AT AN ANGLE. THIS ALLOWS THE TUBE TO BE MORE EASILY INSERTED INTO THE END CAP HOLES (STEP 8 BELOW).



1. Position a 30" channel as shown by lifting the drain elbow up and out of the horizontal return channel. This allows access to the water supply tube.



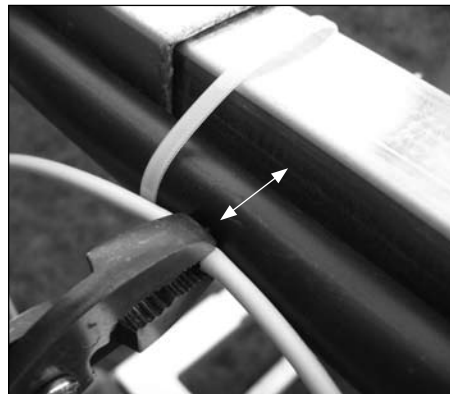
2. Punch a hole in the water supply tube with the 110743 punch. Center the hole between the holes in the end cap.



3. Connect one poly tube to each of the ribbed outlets of each 111044 tee fitting.



4. Gently grip the fitting assembly with pliers as shown above.



5. Firmly push the tapered end of the fitting into the punched hole until the fitting snaps into place.



6. Next, while still gripping the fitting, gently pull the fitting back to seat it in the hole. Do not pull to hard!



7. Slide the channel back into position on the frame. Insert the drain elbow into the lid.



8. Connect the tubes to the fodder channel. Repeat all steps to connect the remaining channels.

## 14

### INSTALL THE WATER PUMP

Required tools and parts:

- WF1170 Garden Hose (2')
- WF2490 Clamp Stainless Steel (2)
- WF1787 Garden Hose Insert Fitting (1)
- 110832 Simer 1/4 HP Submersible Pump (1)

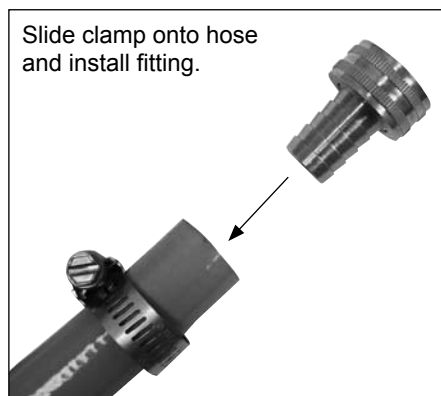
**ATTENTION;** RESERVOIR SHOWN IN SOME PHOTOS MAY DIFFER FROM THE RESERVOIR THAT SHIPPED WITH THE FODDER SYSTEM.



1. Install garden hose fitting in pump. Read documentation included with the pump.



2. Tighten fitting until snug. To prevent damage to the pump housing, do not overtighten.



Slide clamp onto hose and install fitting.

3. Assemble the garden hose using the WF1787 fitting and one (1) WF2490 clamp.



4. Tighten clamp to secure the fitting.



5. Attach the free end of the hose to the T-fitting at the lower end of the Riser Assembly.



6. Attach the hose to the pump and tighten until snug.



7. Set the pump in the reservoir. Keep the power cord outside the reservoir.

\*Actual reservoir may differ from what is shown.

# 15

### TEST WATER PUMP AND SUPPLY SYSTEM AND CHECK FOR LEAKS

Complete these steps:

1. Fill the reservoir with water and set the pump into the reservoir.
2. Verify that all in-line valves are fully open and that all hoses are connected to the fittings.
3. Check to ensure that all white poly tubing sections are attached to the tee fittings with the free end of each tube inserted into the end cap of the 30" channels.
4. Next inspect the horizontal return channels to ensure that the collar of each end cap is inserted in to a hole of the vertical return channel.
5. Verify that the elbow of each fodder channel is inserted into a hole of the horizontal return channel.
6. Once all plumbing and return channel components are in place and checked, plug the water pump into a power supply according to the instructions supplied with the pump.
7. Inspect the system for water leaks.
8. If leaks are found, repair as needed and recheck.
9. Inspect each set of white poly tubes and ensure that water flows freely through them. Adjust tube position as needed to prevent water from splashing out of the channels.
10. Test each in-line valve by partially closing one to reduce water flow to the shelf. Check to ensure water still flows to each fodder channel on that shelf. Then close the valve completely to verify that water flow stops to the fodder channels.
11. Open the valve completely and test another in the same way. Repeat these steps to check all in-line valves.



**WARNING:** *Never close all valves at the same time with the pump running.* Doing so may damage the pump, plumbing, or both.

12. After checking all valves, fully open each one and disconnect the water pump.
13. Continue by installing the air pump and aerator stones.

## 16

### ATTACH THE AIR PUMP AND AERATOR STONES

This system requires two air supply tubes to connect the air pump to each air stone. These are placed at the bottom of the reservoir when installed.

1. Choose a position for the air pump and use it to determine the length of each air tube. Using the 109170 plastic pipe and tube cutter, cut two air tubes from the supplied 110091 tubing. These must be long enough to run from the air pump position 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 water from the reservoir.

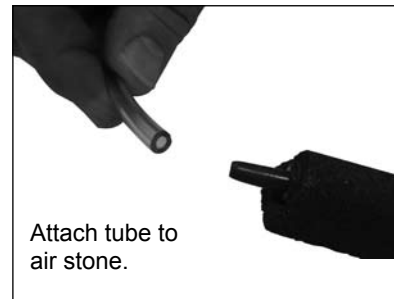
2. Attach a tube to each stone.
3. Connect the free end of each tube to the air pump and lower each stone into the reservoir.
4. Place the air pump in the position chosen in Step 1.
5. Connect the air pump to power and test the operation. Verify that air is filtering through each air stone. Monitor the air pump regularly to ensure proper operation of the aerator system.

**NOTE:** When the fodder system is fully operational, the air pump will run continuously. **Do not connect it to the circuit controlled by the timer.**

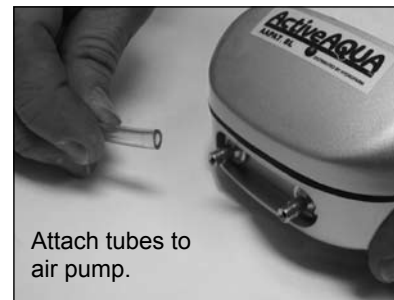
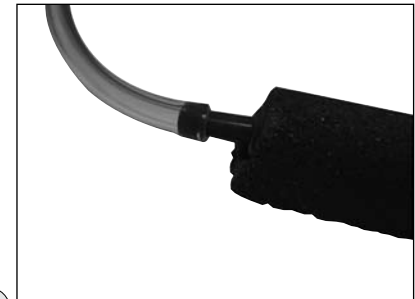
6. After testing air flow, turn off the pump.
7. Continue by connecting the 109071 Intermatic 24-Hour Electronic Time Switch to control the water pump. Consult the instructions that shipped with the time switch to correctly connect the switch to the pump.

**ATTENTION:** Consult the services of a qualified, licensed electrician to properly install the timer to control the water pump. Pump cycling sequence depends on the seeds grown, environmental conditions, and the desired fodder cycle. Overall water flow rates are controlled by the in-line valves present in the arm assemblies attached to the frame.

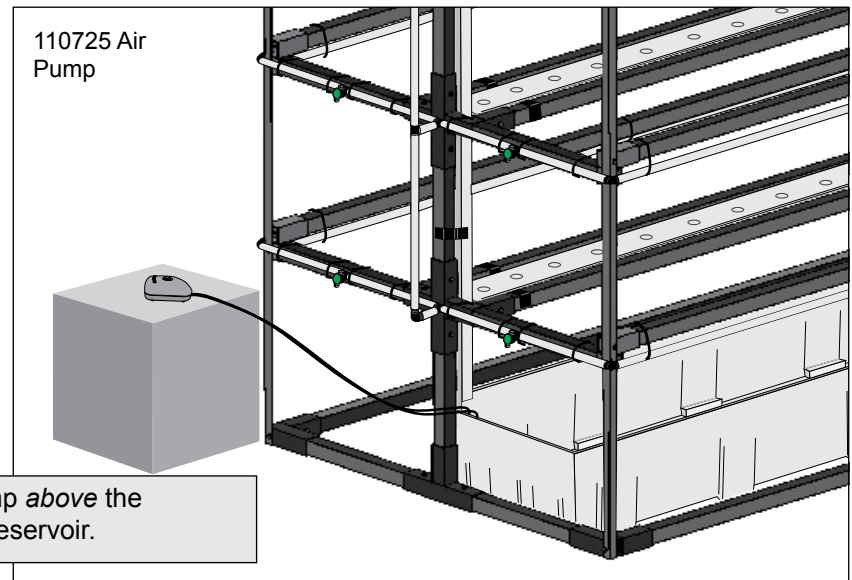
**ATTENTION:** Always position the 110725 air pump **above** the reservoir/water level to prevent siphoning of the reservoir.



2

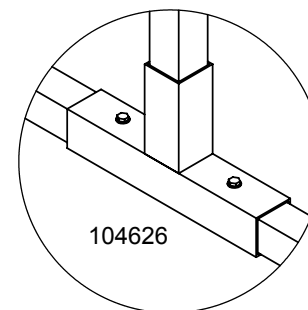
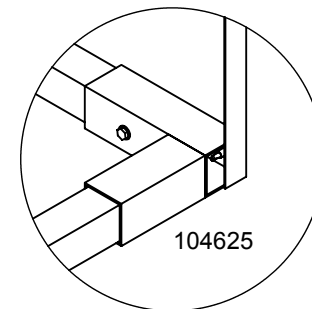
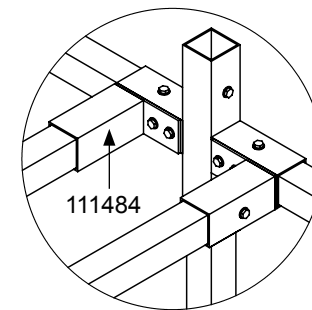
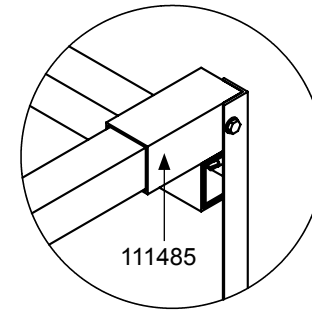
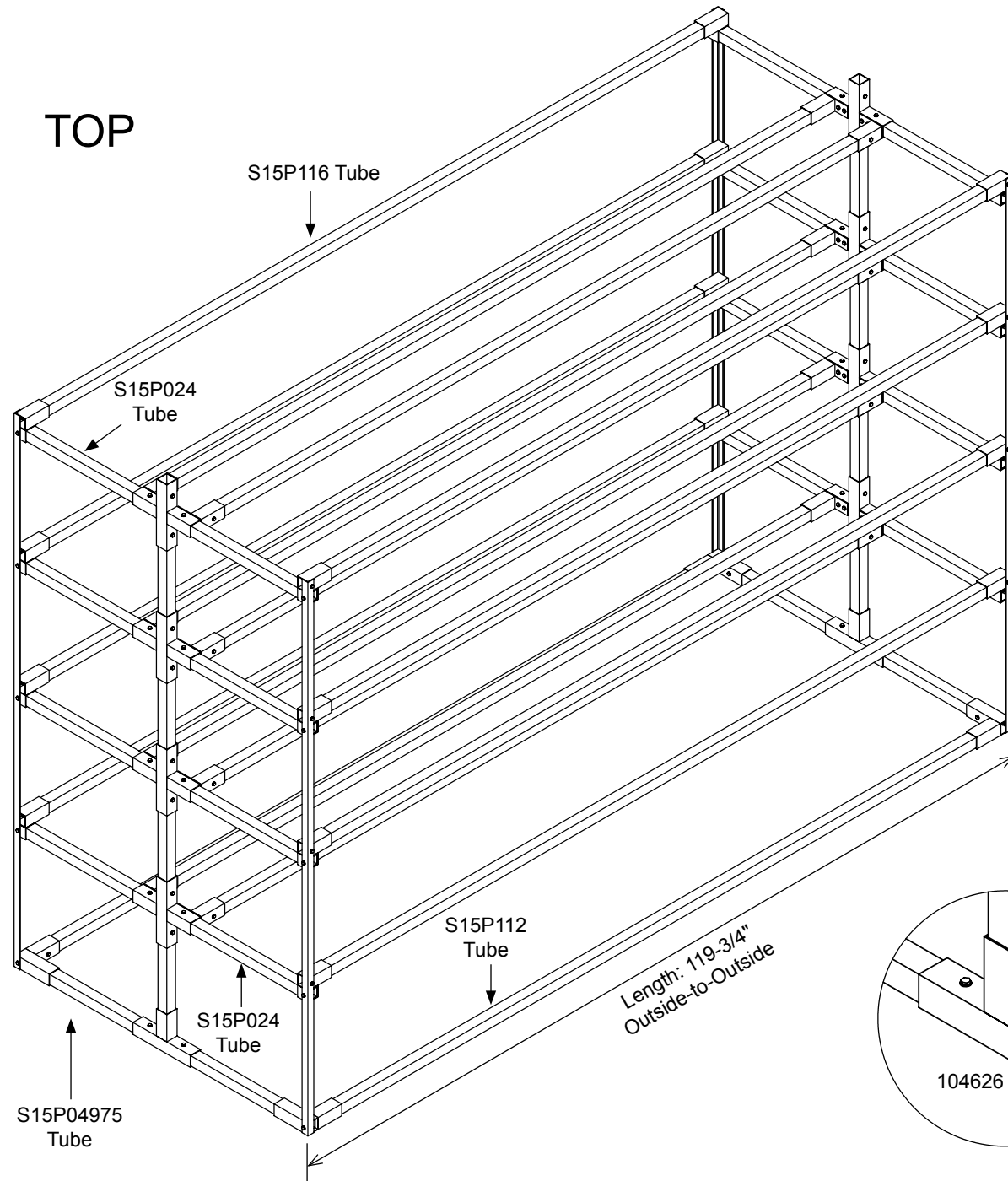


3



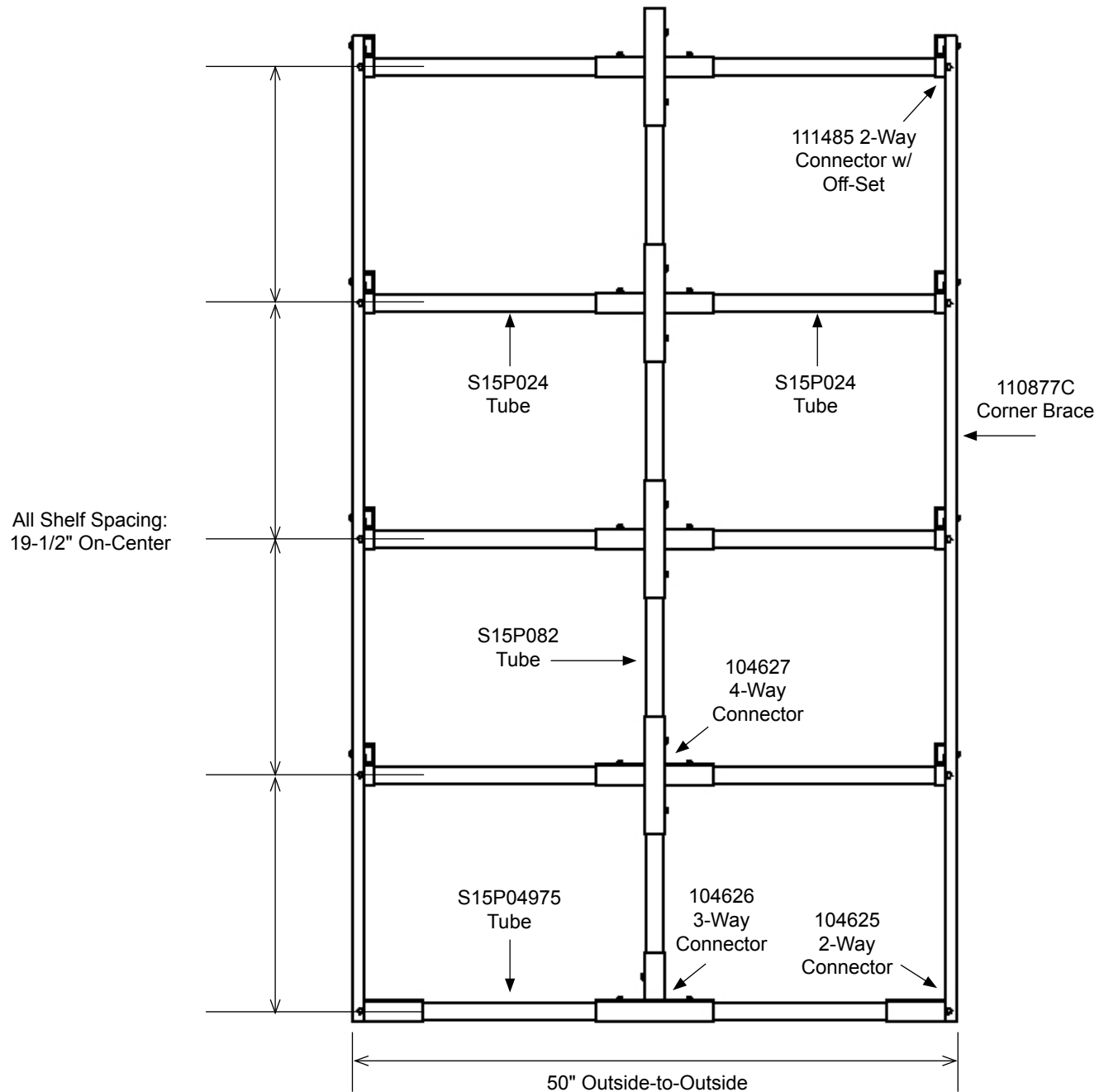
# 110846 Quick Start Guide: Basic Frame Assembly

TOP

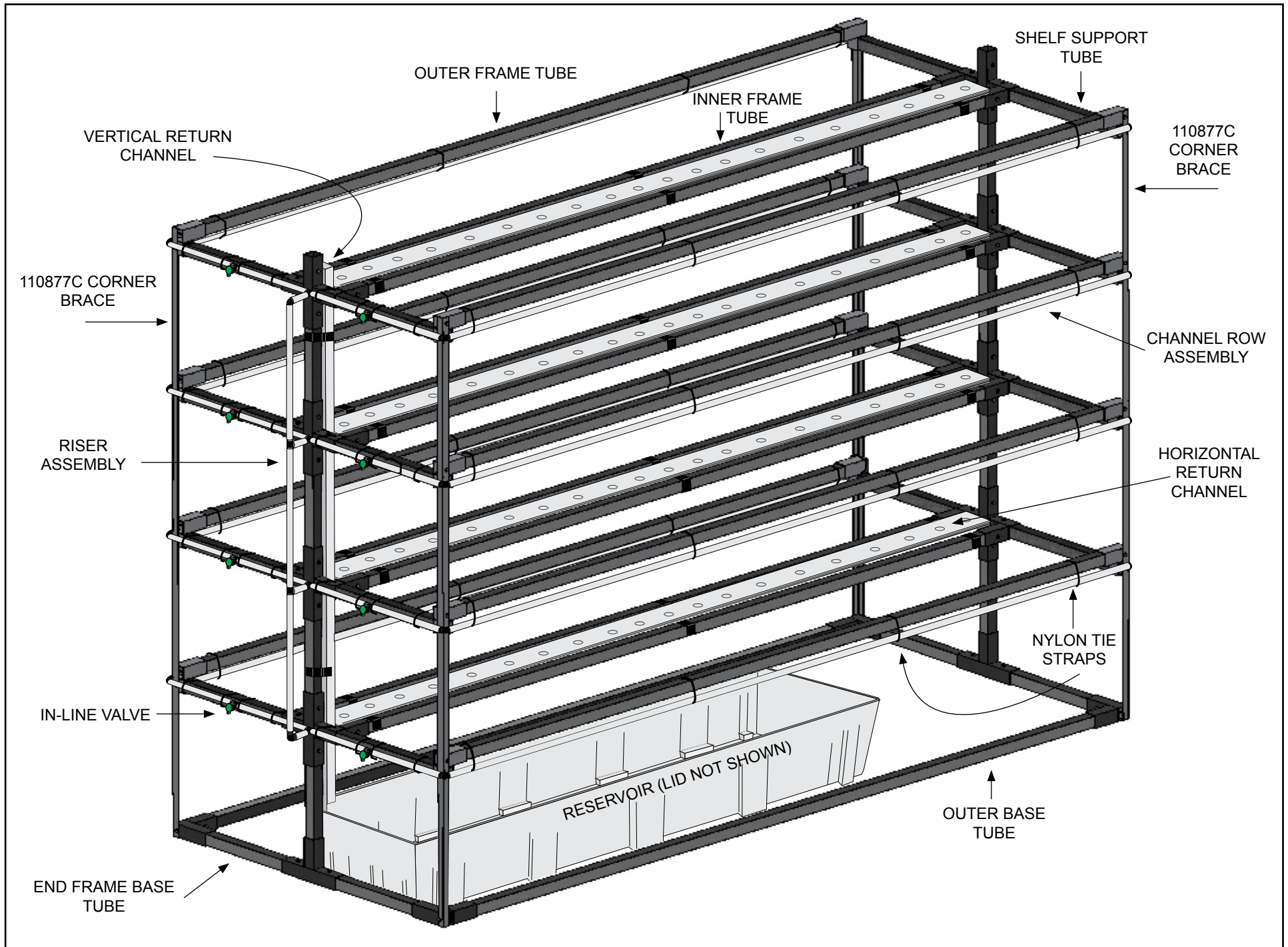




# 110846 Quick Start Guide: End Frame Assembly



# 110846 Quick Start Guide:



## Quick Start Guide: Photos



Photo (left) shows in-line valve, right arm assembly, and installed 30" fodder channels.

Photo (right) shows 30" fodder channels and horizontal return channel.

Photo (below) shows reservoir and channel row assembly with attached poly tubes.



Actual frame may differ from what is shown.



## Quick Start Guide: Photos

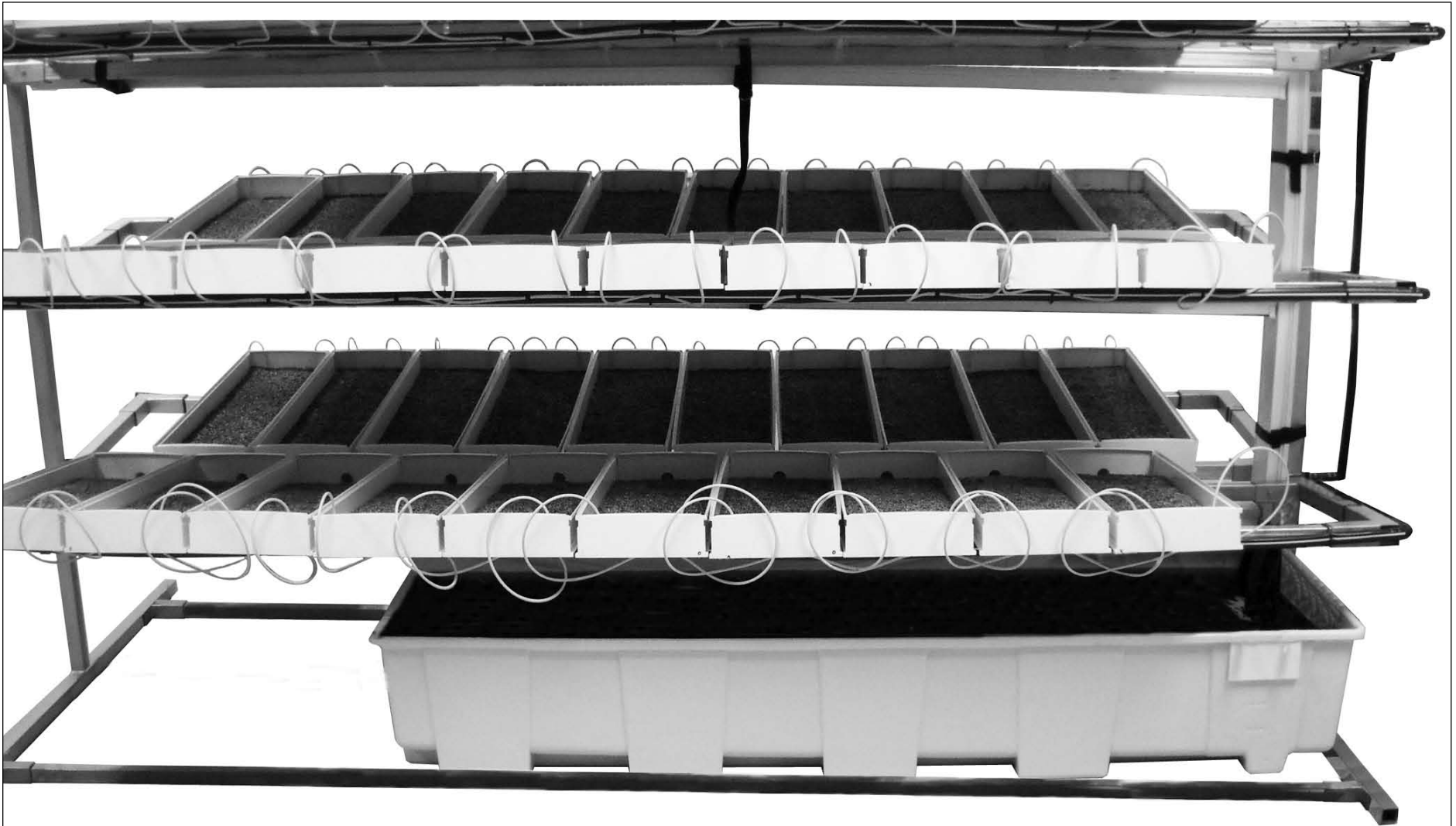


Photo shows a sample fodder frame with installed fodder channels and reservoir. (The lower two levels are shown.) Actual frame may differ. Tray positions and supply tube assemblies are the same regardless of frame design.



# 110846 Quick Start Guide: Startup and Maintenance

## General Startup

Many factors must be considered before you begin growing fodder in your new system. One of the best sources of information is the internet. Spend as much time as needed to research how you want to get the most out of your system. Each growing situation and fodder use is unique to the user. To prevent frustration and wasted time, a few hours spent on the internet can save you days or weeks in the field trying to achieve acceptable results.

Remember: To achieve the results specific to your fodder needs, you must experiment using your fodder system and record the results for reference. This will help you to better understand how the system works, what conditions are required to achieve maximum production, and how to adapt and react to changes when these occur.

Here are a few items to consider before you get started:

- What animals (and how many) will eat the fodder?
- How often will you feed fodder to your animals?
- Where will you set the fodder system and what are the environmental conditions of that location?
- Is water and electricity available for the fodder system?
- Is the space large enough to allow easy harvest of the fodder and maintenance of the system?
- Is there enough light (natural or artificial) to help the fodder grow?
- Will you be able to clean and maintain the system as required in the location where the fodder system will be placed?
- What type of seed or grain will you grow?
- Have you found a supplier for your seed/grain?
- Will clean seed/grain be used, or do you plan to clean these yourself?
- How will you store the seed to prevent loss to rodents and pests?
- How will you transport the fodder from the system to the animals?
- Do you have access to products and information to help prevent mould and fungus growth should these occur?

## General Maintenance

The fodder system requires regular maintenance and cleaning. The duration between the maintenance and cleaning sessions, however, depends on how and where the system is used and what seeds are grown. The only way to determine a regular maintenance and cleaning schedule is to closely monitor your system once it is fully functioning. Below are a few suggestions to help maintain and clean the fodder system:

- To prevent potential shock, **disconnect power supply before you service or perform any maintenance. Do not remove or service the pumps without first disconnecting the power supply to them.**
- Frequently check the drain sock attached to the lower end of the vertical return channel. When seeds are present, remove and rinse the sock and reinstall to prevent seeds from entering the reservoir.
- Check all fittings and channels to ensure there are no leaks. Repair or replace damaged parts immediately. Seal all leaks when found.
- Clean and disinfect the reservoir after every water change. The time span between water changes depends on the type of seed and how clean the seed was when it was added to the fodder channels.
- Clean and disinfect the fodder channels after each harvest. Use a 10:1 mixture (water/bleach) to disinfect the channels and reservoir when cleaning. Be sure to rinse thoroughly to remove the cleaning solution before using the channels or refilling the reservoir.
- Inspect all poly tubes that connect the supply line to the individual fodder channels to ensure that water flows easily through them. Remove and clean the tubes if needed. Replace if tubes are damaged or leaking.
- Check all tee fittings that supply water to each channel to ensure that these are not plugged. Clean as needed.
- Check the aerator stones, tubes, and pump to verify that these are functioning as designed.



# 110846 Quick Start Guide: Growing Tips

## General Growing Tips

Despite the factors that must be addressed before you begin using your fodder system, these general tips will help you get started:

- **Water Quality:** Clean water is a must. If you can't drink it, don't use it. If you are not sure about the water quality, have it tested.
- **Water Temperature:** Keep the water temperature constant and in the range suitable for the seed or grain you are using.
- **Quality of the Seed or Grain:** While it may cost slightly more, good quality, clean grain or seed will save time. You won't have to clean the grain, or worry about foreign objects growing in the fodder that might pose a danger to your animals if eaten.
- **Climate Control:** A properly maintained environment is a must. Ensure you have controls in place to automatically control temperature and humidity. Additionally, do not rely solely on automatic equipment; ensure you are physically monitoring the environment daily and make adjustments if needed.
- **Keep the System Clean:** Follow the cleaning guidelines presented in this guide. *Do not allow water to become dirty or filled with debris.*

General Guidelines to Promote Optimal Growth	
Water Temperature	60° F (minimum) to 75° F (maximum)
pH Level	6.2 - 6.4 (range)
CF (conductivity factor)	16 - 18
EC (electrical conductivity)	1.6 - 1.8
PPM (parts per million)	1120 - 1260
Humidity	40% to 80% (Best in most cases is 60%.)
Grow Room Temperature	63° F (min) to 75° F (max)

## Design Yield Test\*

The Fodder-Pro Feed System is designed to harvest ten (10) 30" GT80 premium channels per day. Preliminary trials produced approximately 7.33 lbs. of fodder per 1 lb. of dry seed. Trial was conducted using barley grain. (It is expected that results will vary when different seed is used.)

- **Preparation:** The seed was spread in each of the ten (10) channels at a depth of approximately ½" with a 1 – 1 ½" space between the seed and the ends of the channel. This allows room for expansion as the seeds swell from the water regiment and sprouting of the seed mat.

Seeds were soaked approximately four (4) hours before they were added to the channels and spread to the required depth.

- **Calculations:** Ten (10) channels at 30" each equals 25' of channel. At .75 lbs. of seed per foot, approximately 18.75 lbs. of seed per day would be needed. At this daily germination rate, system production results in approximately 134 - 137 lbs. of barley fodder per day. (Individual results may vary.)
- **Estimated Capacity:** Using a typical diet of 2% of the animal's body weight for fodder, estimated feed capacities for the Fodder-Pro Feed System are shown in the table below.

Estimated Feeding Capacity	
ANIMAL BODY WEIGHT	DAILY FEEDING CAPACITY (# OF HEAD)
1,400 lbs.	4 - 5
800 lbs.	8 - 9
200 lbs.	33 - 34
Poultry	1225 - 1245

\*INDIVIDUAL RESULTS MAY VARY.

# 110846 Quick Start Guide: Getting Started

The photos on this page show fodder at various stages of growth. The design of the fodder system shown in these photos differs from the 110846 Fodder-Pro Feed System. Photos are included for reference only.

Use the following steps as a basic guide to get started. These are general steps; additional steps specific to your planned fodder production may be necessary.

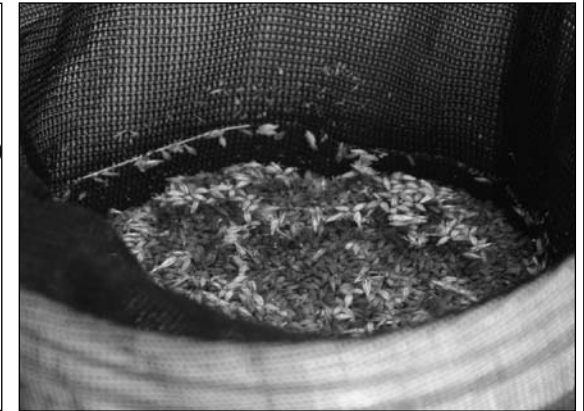
1. Assemble the fodder system, fill the reservoir, and test the water system.
2. Determine what seed to grow and purchase the seed.
3. Soak the seeds in the soaker bags and buckets.
4. Using the 111043 Seed Spreader, spread the seed to a uniform depth.  
**Consult the Design Yield Test information on the previous page for the 10-channel rotation calculations.**
5. Set the fodder channels in place on the frame and connect the poly tubes for the water. Close the in-line valve or valves to the shelf.

**NOTE:** Do not close all in-line valves at the same time. Some valves must remain open when the pump is running to allow water to circulate.

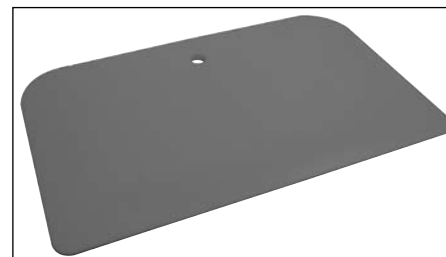
6. Turn on the water pump and slowly open the in-line valve or valves to supply water to the seeded fodder channels.

**NOTE:** The water flow rate and the control of the water depends on many different factors and is accomplished by operating the in-line valves and setting the 109071 timer. Careful monitoring of the fodder system for the first few fodder production cycles is strongly recommended. During this time you can determine when water is needed and how much water is needed. Consult the documentation included with the 109071 timer to properly set and maintain the timer. Consult the services of a qualified electrician to install the timer and connect the pump to the timer.

7. Adjust water flow using the in-line valves. Monitor the flow so that seeds do not wash into the return channels leading to the reservoir.
8. Set the timer to control when water is supplied to the different channels.
9. Monitor the system and inspect the seeds to ensure that mould is not present. Consult internet data specific to your type of fodder.
10. Continue to soak seeds and load fodder channels according to your fodder production plan and schedule.



Photos above show the 107651 bucket and the 111041 soaker bag. Add seed to the bag, set inside the bucket, and add water to cover all seed.



Photos above show the seed as seen spread out in a fodder tray. Photo to the left shows the 111043 seed spreader used to level the seed once it has been added to a fodder tray.

(Actual fodder tray may differ from what is shown above.)

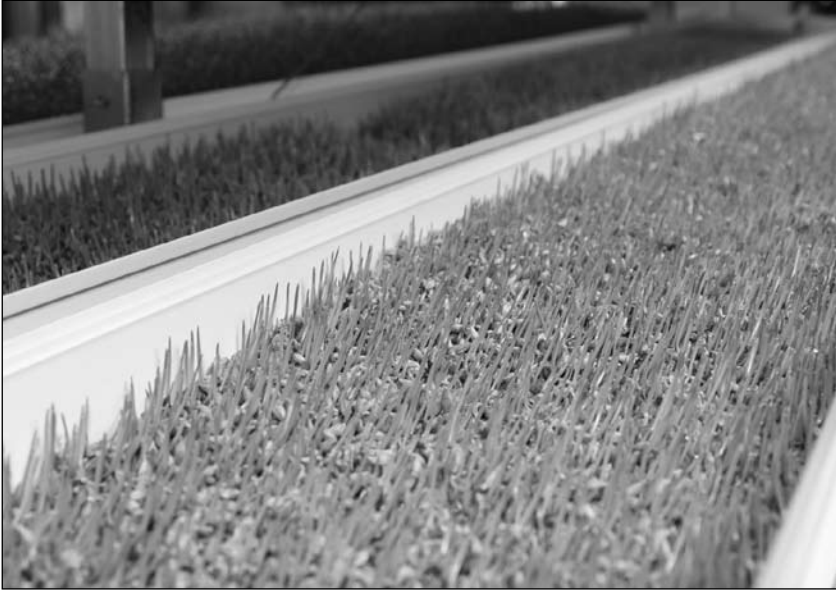


Photo shows the seed as it grows in the fodder channel.



Photo shows the seed at different stages of growth.



Close-up photos showing seed growth.



Fodder is shown ready to harvest. Remove the fodder from the channel and feed the entire mat to the animals. Clean the tray, reseed, and repeat the process.



## BASE RAIL AND CLEANING THE RESERVOIR

### BASE RAIL REMOVEAL

The 112" base rail tubes are designed to be removed to allow easier cleaning of the reservoir and maintenance of the system. If desired and *after setting the frame in the location where it will be operated and maintained*, you can remove the Tek screws that secure one (1) base tube to the corner connectors.

Complete these steps:

1. First, determine the side of the frame that you will use to access the reservoir and remove those fastens *from that base rail only*.
2. Once the Tek screws are removed, slide the base rail toward one corner connector so that it clears the opposite corner connector.
3. Then, slide the tube out of the connector and set aside to clean the reservoir.
4. After cleaning the reservoir, place it back in position and slide the base rail into the connectors at each corner.
5. Optional Step: Secure the base rail to one corner connector. If desired, replace the Tek screws for this base rail with a removable customer-supplied fastener such as a bolt and nut or a pin with a clip.

**NOTE:** These fasteners are not included and if needed are supplied by the customer.

Remove only one base rail. **NEVER REMOVE BOTH BASE RAILS AT THE SAME TIME!**

