



The Little Greenhouse

8 1/2' x 6 1/2'

KIT INCLUDES

- Precut PVC pipe with glue
(Color coded for easy installation)
- 6' 3" hinged door with latch
- 110/120v exhaust fan
- Precut UV resistant plastic film
- All mounting hardware
- Detailed instruction manual
- Metal anchors

MATERIALS REQUIRED

- 2 – 1" x 6" x 10' Lumber
- 6 – 1" x 6" x 8' Lumber
- 10 – 1" x 4" x 8' Lumber
- 2 – 10' Lattice Strips
- 2 – 8' Lattice Strips
- 1 – lb. 8D Galvanized Deck Nails

Manufactured by:
ACF Greenhouses
 380 Greenhouse Drive
 Buffalo Junction, VA 24529
help@LittleGreenhouse.com
 (434) 374-2706

The Little Greenhouse

ASSEMBLY MANUAL

AVAILABLE OPTIONS

| | |
|----------------------------|--|
| Fitted Shade Cloth | Cut for an exact fit to hold tightly and look nice. Reduces inside temperature 10° - 15°. (Some plants require partial shade.) |
| Misting System | Made to fit. Kit comes complete with pipe, fittings, misting nozzles, and water hose attachment for easy installation. Perfect for use with an inexpensive water timer (not included). |
| Patching Tape | Use to cover those slight mistakes. 2" x 60' |
| Replacement Plastic | 2 year UV and PVC rated. Same as original. |
| Replacement Fans | The best we have found for the price. Available directly from us. |
| Anchors | Four welded steel anchors used with cement will secure greenhouse. |
| Ground Cover | Made to fit. Ensures weed control inside the greenhouse. |

MATERIALS REQUIRED

8½' X 6½'
 2 - 1 X 6 X 10' Treated Wood
 6 - 1 X 6 X 8' Treated Wood
 10 - 1 X 4 X 8' Treated Boards
 4 - ¼" x 1 ¼" x 10' Lattice
 1 lb. - 8D Galvanized Deck Nails

TOOLS REQUIRED

| | |
|------------------------------|------------------------|
| Wire Cutter | Knife or Razor |
| 15' Tape Measure | Saw (hand or electric) |
| Drill (electric or cordless) | Hammer |
| w/Phillips screwdriver bit | |
| 1/8" drill bit | |

INSTRUCTIONS

STEP #1 Sort all pipe by color and check with parts list to ensure all pieces are accounted for.

STEP #2 **Foundation (Refer to Diagram 1)**

For the foundation you will need eight (8) treated lumber 1" x 6" x 10' long.
The following cuts are required.

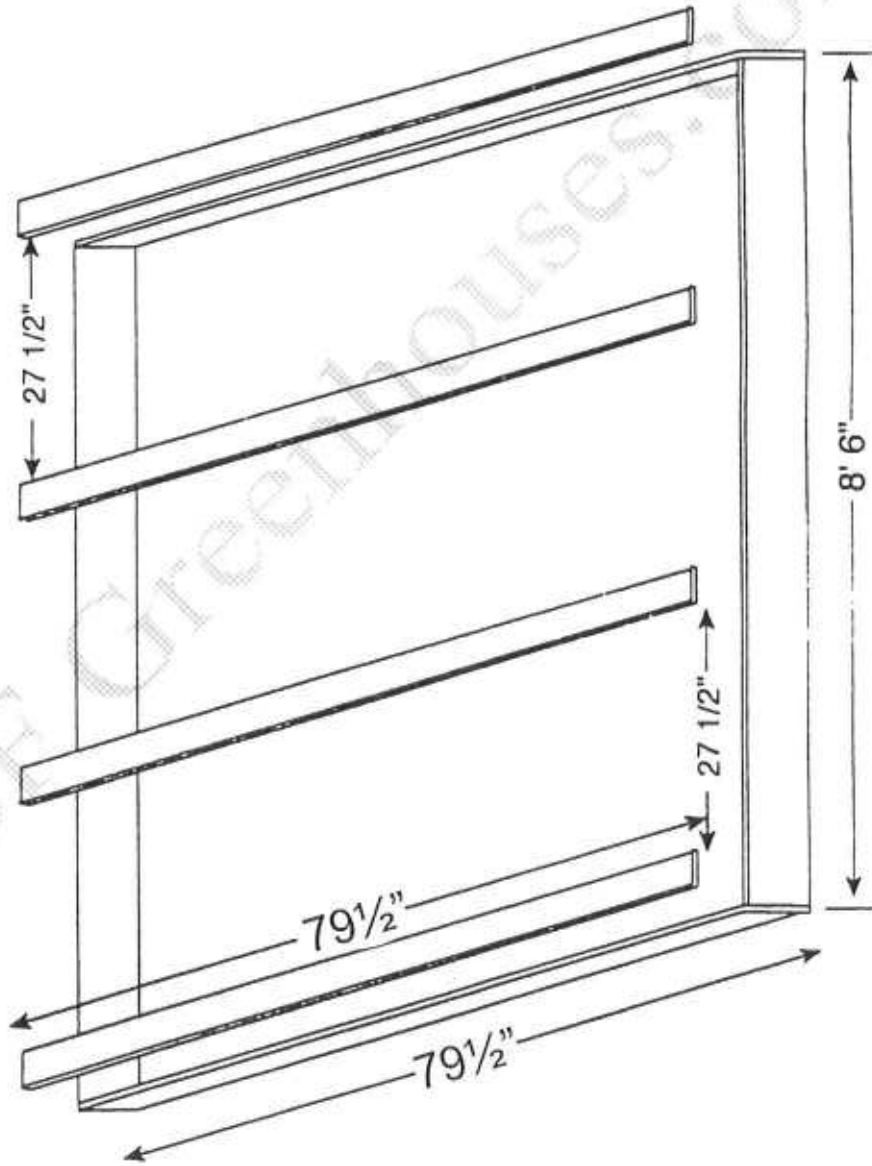
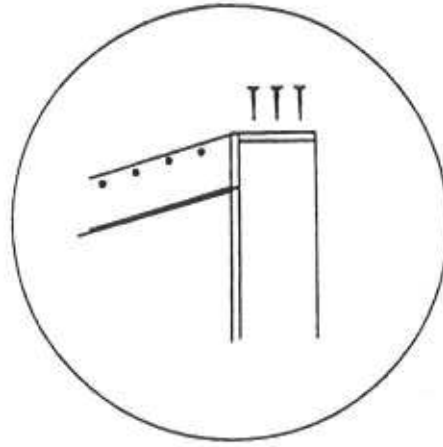
8½' x 6½' Greenhouse

2 - 8'6" Length

6 - 79½" Length

- A. Assemble as shown in Diagram 1. Longer boards will be nailed to the inside of the shorter boards.
- B. Lay remaining 4 boards on the top of the frame. The 2 outside boards should be mounted flush on both ends and on the side. The outside legs of the greenhouse will use these boards for support.
- C. The 2 inside boards will provide support for the inside legs of the greenhouse. Position the edge of these boards 27½" from the edge of the corner boards. Nail in place.
- D. Flip the foundation over and you are ready to assemble the walls. The foundation is complete except for anchoring it to the ground.

DIAGRAM 1



There are 3 different drawings showing the arrangement of pipe for the front, the middles, and the back wall. You will begin with the assembly of the middle sections. These are the easiest to assemble.

Note: The other sections differ only by:

- 1) Front - door mounting
- 2) Back - fan mounting

STEP #3

Middle Sections

There is one middle sections. Begin by assembling one section at a time.

- A. Using Diagram 2, arrange the pipe on the ground according to the color coding.
- B. Arrange fittings according to the pipe drawings.

Please Note: Tees and 45 degree elbows on the sides will have pre-drilled holes all the way through. The elbow at the top is a 4-way elbow.

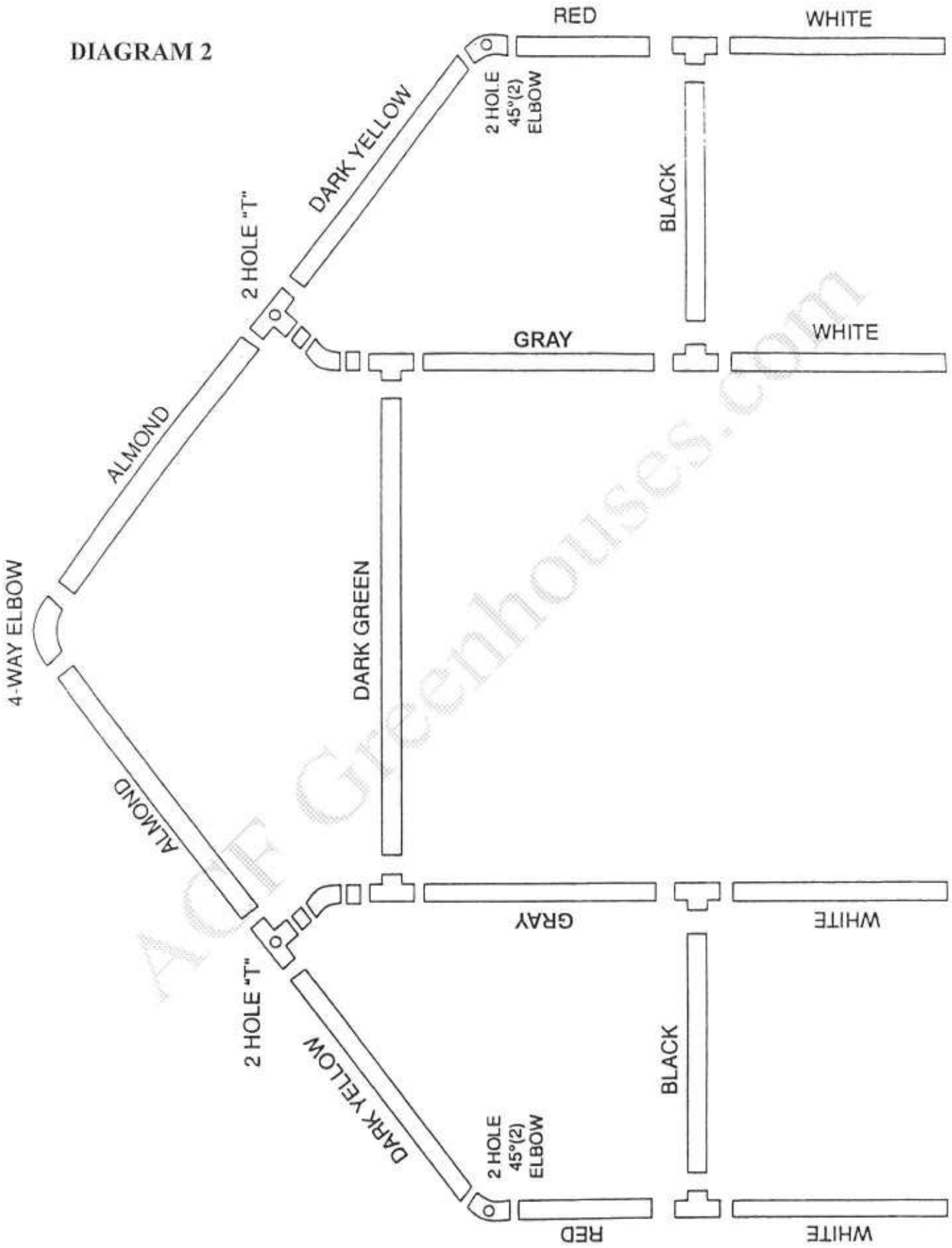
- C. Assemble this section. Repeat this step for the other middle sections. Fittings can be connected with the 2" long PVC pipe provided. Always push pipe into the fittings as far as possible.

Use a rubber mallet to ensure the pipe is completely seated into the fittings.

NOTE: Before connecting the 2 hole 45 degree elbow fittings to the 1" pipe, insert a piece of 1/2" pipe into the pre-drilled hole at the fitting bend. Doing so will ensure that the 1" pipe do not partially block the 1/2" hole when inserted.

At this point the frame will be extremely flexible. When the turnbuckles and wire bracing are installed the frame will become rigid. This step will be done after all framing has been completed.

DIAGRAM 2



STEP #4

Back Wall

The back wall section is identical to the middle sections, except for the additional cross members for mounting the fan.

- A. Arrange the pipe and fittings on the ground as shown in the back wall drawing. (Diagram 3)

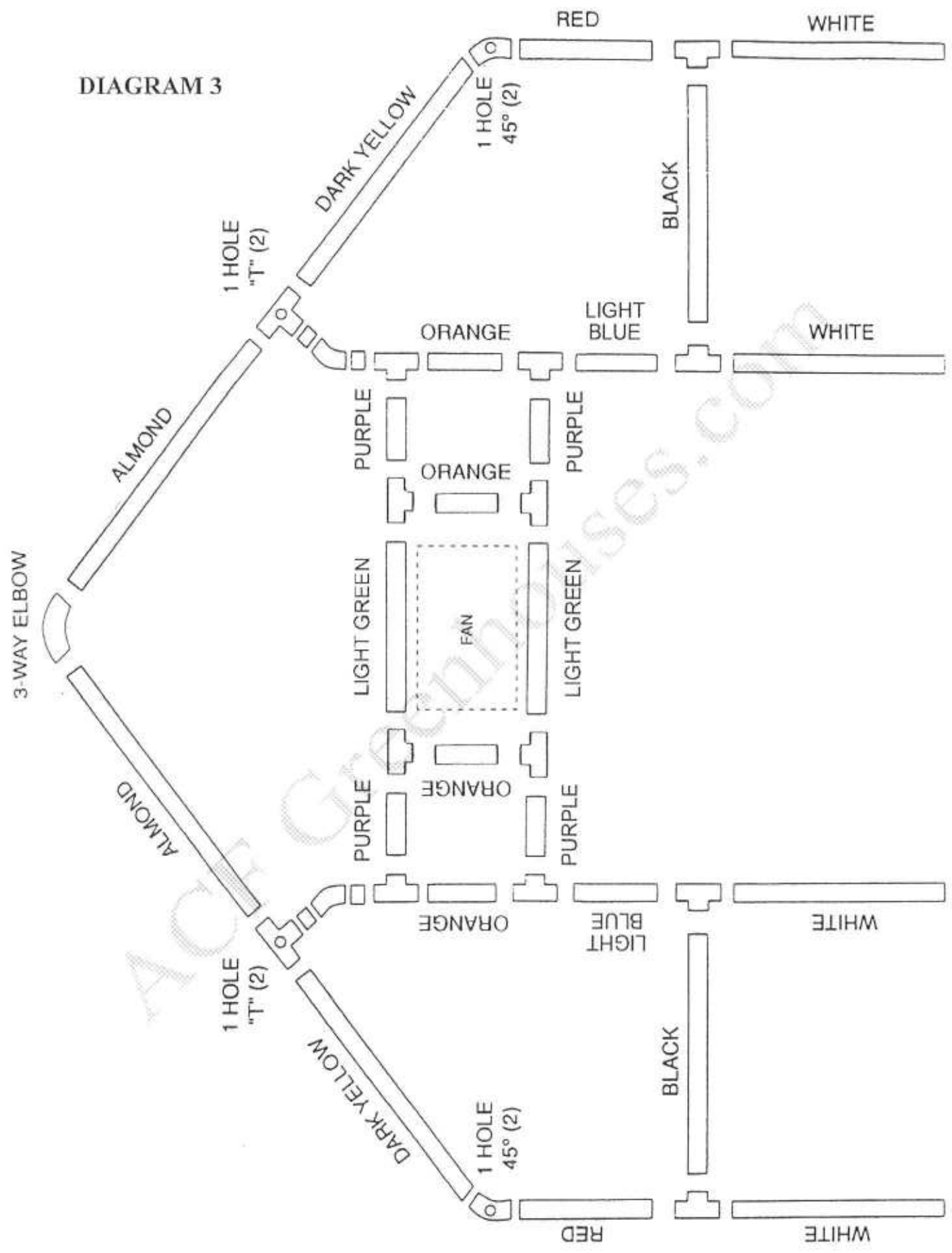
Note: The tees and 45 degree elbows on the sides will have pre-drilled holes **on one side only**. Position these fittings such that the holes are **facing upwards towards you**.

- B. Assemble this section and proceed to the next step.

Use a rubber mallet to ensure the pipe is completely seated into the fittings.

NOTE: Before connecting the 1 hole 45 degree elbow fittings to the 1" pipe on the back and front walls, insert a piece of 1/2" pipe into the pre-drilled hole at the fitting bend. Doing so will ensure that the 1" pipe do not partially block the 1/2" hole when inserted.

DIAGRAM 3



STEP #5

Front Wall

The front wall section is also identical to the middle sections except for the mounting of the door. Use a rubber mallet to make sure the pipe is completely seated into the fitting. **This is very critical for the door. Otherwise door will not fit properly.**

Arrange the pipe and fittings by following Diagram 4.

Note: The tees and 45 degree elbows on the sides have pre-drilled holes **on one side only**. Position these fittings so the holes are **facing down towards the ground**.

You have completed assembly of all walls.

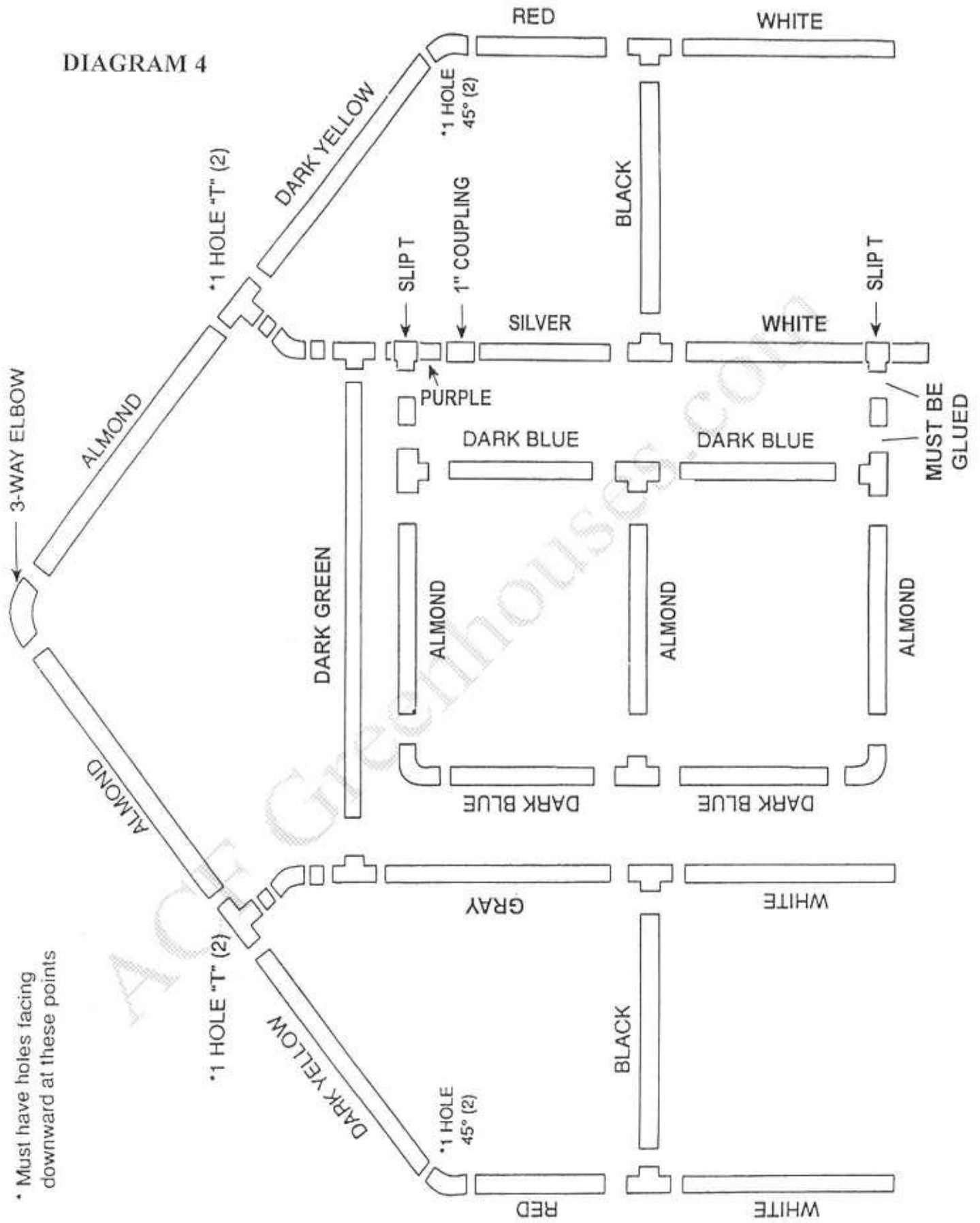
Remaining Pipe

The only PVC pipe that should be left are listed below for each size. These are used to connect the walls together and to give the plastic covering its shape. There is one other piece of pipe - 1/2" x 18" used for the flap of plastic covering the fan. The half-pipe will be used to secure the plastic to the frame. This is done later.

- 8 1/2' x 6 1/2'
- 12 - 1/2" x 26" pipe
 - 8 - 1/2" couplings
 - 2 - brown pipe

In windy areas, it is recommended that the pipe and fittings for the roof sections be glued together.

DIAGRAM 4



* Must have holes facing downward at these points

STEP #6

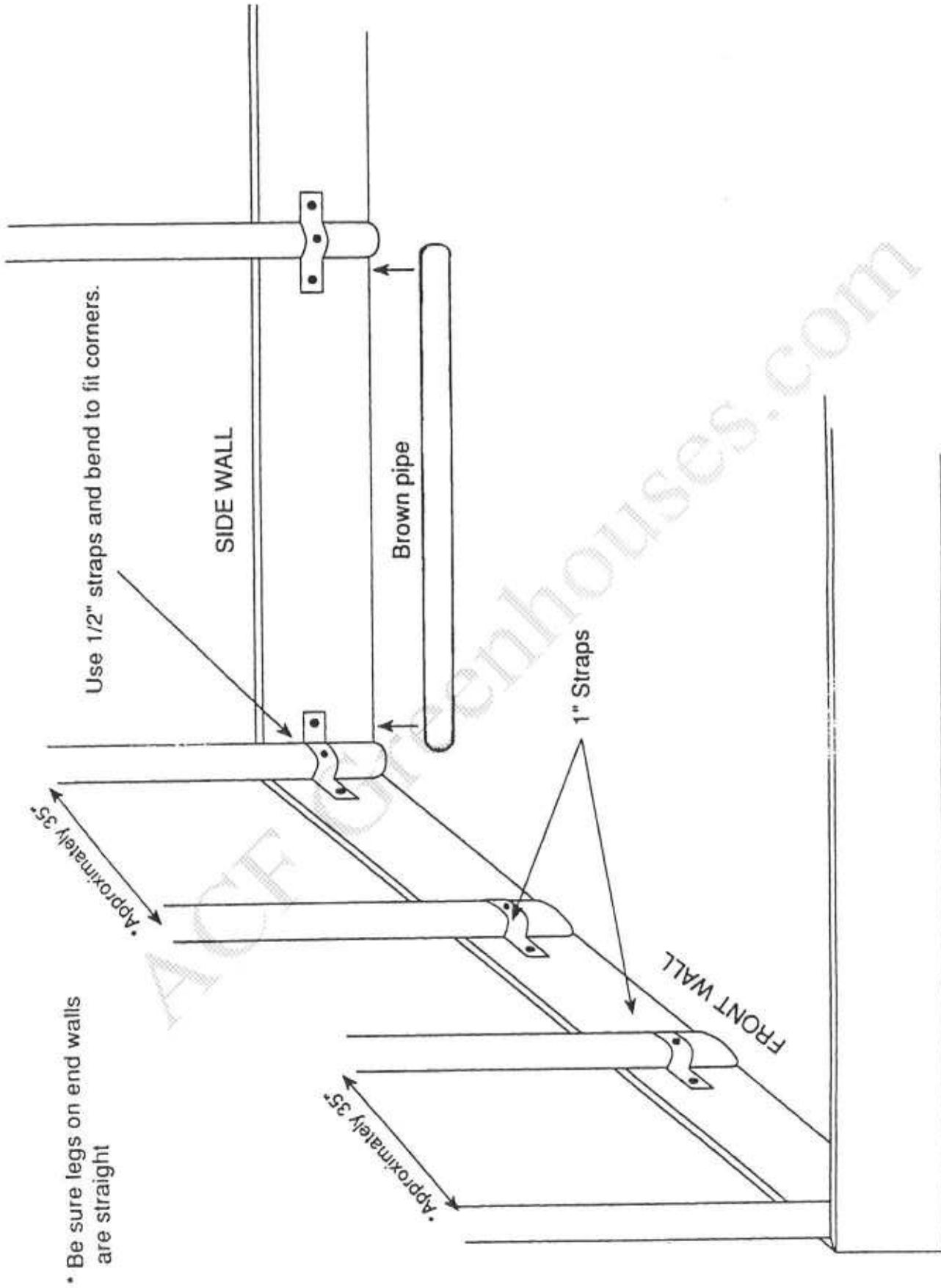
Mounting Sections to Foundation

We will begin mounting the two end walls. Be sure that the pre-drilled holes in the elbows, tees, and 45 degree elbows are facing the opposite end wall. The remainder of this project will require 2 people for ease of construction.

- A. While one person holds the front wall up inside of the foundation, the other person can **fasten the outside legs to the corners with ½" two hole pipe straps**. These smaller straps will need to be bent outwards slightly to give a tight fit around the legs. Do not bend these straps too far. Mount with the ¾" screws provided. These corner straps provide most of the strength for the wire bracing. Insert a third screw into the middle of every strap to secure it to the PVC pipe.
- B. The inside legs will be mounted with the **larger 1" 2-hole straps**. No bending is required. Adjust the inside legs such that the door is evenly spaced from the frame. The door flashing, installed later, will allow for some margin of error.
- C. Repeat step 6A to mount the back wall.
- D. Lay one brown pipe between the legs of each section. This pipe allows correct spacing between the legs and between the top center ridge. (See Diagram 5) Use the 1" 2-hole straps to fasten the legs to the frame.
- E. We will now connect the walls. The brown pipe used above will connect the 3-way and 4-way elbows at the top. Using three of the 1/2" x 26" PVC pipe, insert through the 2-hole fittings of the middle sections into the 1-hole fittings on the end walls. These pipe can be connected with the couplings provided.

You are now ready to strengthen the entire frame using the wire and turnbuckles.

DIAGRAM 5



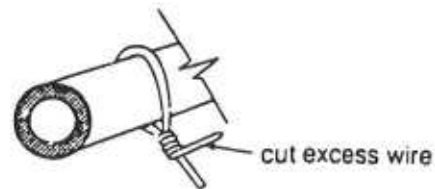
STEP #7**Fastening Wire**

Make sure all walls and corners are straight.

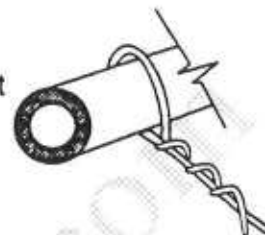
Note: Wrap the excess wire around so that the tie is as close to the pipe as possible. (See Diagram 6A at right) Loose ties will slip when tightening the turnbuckles and could cause you to run out of adjustment with the turnbuckles.

DIAGRAM 6A

Correct



Incorrect

**REFER TO DIAGRAM 7 FOR STEPS A-D****A. Side Walls**

Begin with the left side wall.

1. To make assembly easier, we will install turnbuckles after all wire has been secured. You have been provided with more than enough wire. Cut all ends long to give enough wire to wrap around the pipe.
2. String wire from the pipe strap in the corner of the back wall foundation to the 45 degree elbow on the front wall. Tie the wire above the 45 degree elbow to keep the wire from falling to the ground. This will also keep downward pressure on the entire frame. Repeat this procedure from the front wall pipe strap to the 45 degree elbow on the back wall.
3. Remember to repeat this step for the right side wall.

B. Roof Sections

The same directions apply for both roof sections. We will begin with the left roof section.

1. String wire from the back wall 45 degree elbow to the elbow at the top of the front wall. Tie the wire below the 45 degree elbow on the back wall and to the opposite side of the elbow on the front wall.
2. Repeat this procedure from the front wall 45 degree elbow to the elbow at the top of the back wall.
3. Remember to repeat this entire step for the right roof section.

When turnbuckles are in, the wire you have installed will keep the greenhouse from swaying back and forth.

C. Front and Back Walls

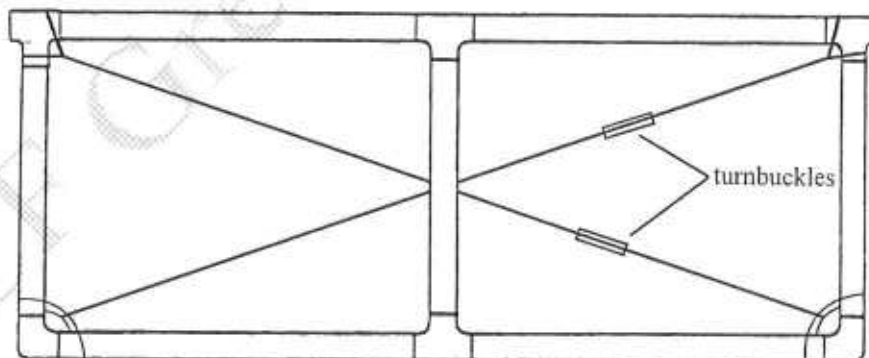
We will begin with the left side of the front wall.

1. String wire from the pipe strap at the lower left foundation corner to the top of the fitting of the shelf bracket of the left inside leg.
2. String wire from the pipe strap of the inside leg to the top of the shelf bracket fitting on the outside leg.
3. String wire from the same pipe strap as in Step #1 to the top of the fitting at the door. The top of these fittings is also part of the left roof section.
4. Remember to repeat the above 3 steps for the right side of the front wall, and for the left and right sides of the back wall.

D. Door Section

1. Cut wire 13" long. Make two loops as shown in diagram 7B.
2. Fit the two loops over the corners that will swing out on the door frame.
3. Cut 2 pieces of wire (approximately 6" each) long enough to tie around outside part of 1" T on opposite corners of door frame. Criss-cross wire to the loops on other corner. See Diagram 6B.
4. Strengthen door frame using two turnbuckles.

DIAGRAM 6B



Note: Securing Center Support Pipes

To secure center vertical legs in greenhouse. Align center post with endwall center post. Draw a circle around the pipe on wood base, move pipe to the side and using screws provided, drill three screws inside the circle, leaving $\frac{3}{4}$ " of the screw above the wood base. Reposition the pipe over the screws.

DIAGRAM 7A

Installing Door Wire:



1. Cut wire 13" long
2. Tie at ends to form circle
3. Wrap around door corners (bottom and top)
4. Install wire and turnbuckles

*Note: Tie wire around top of opposite roof section

All wire must be inside of greenhouse to prevent torn plastic.

DIAGRAM 7

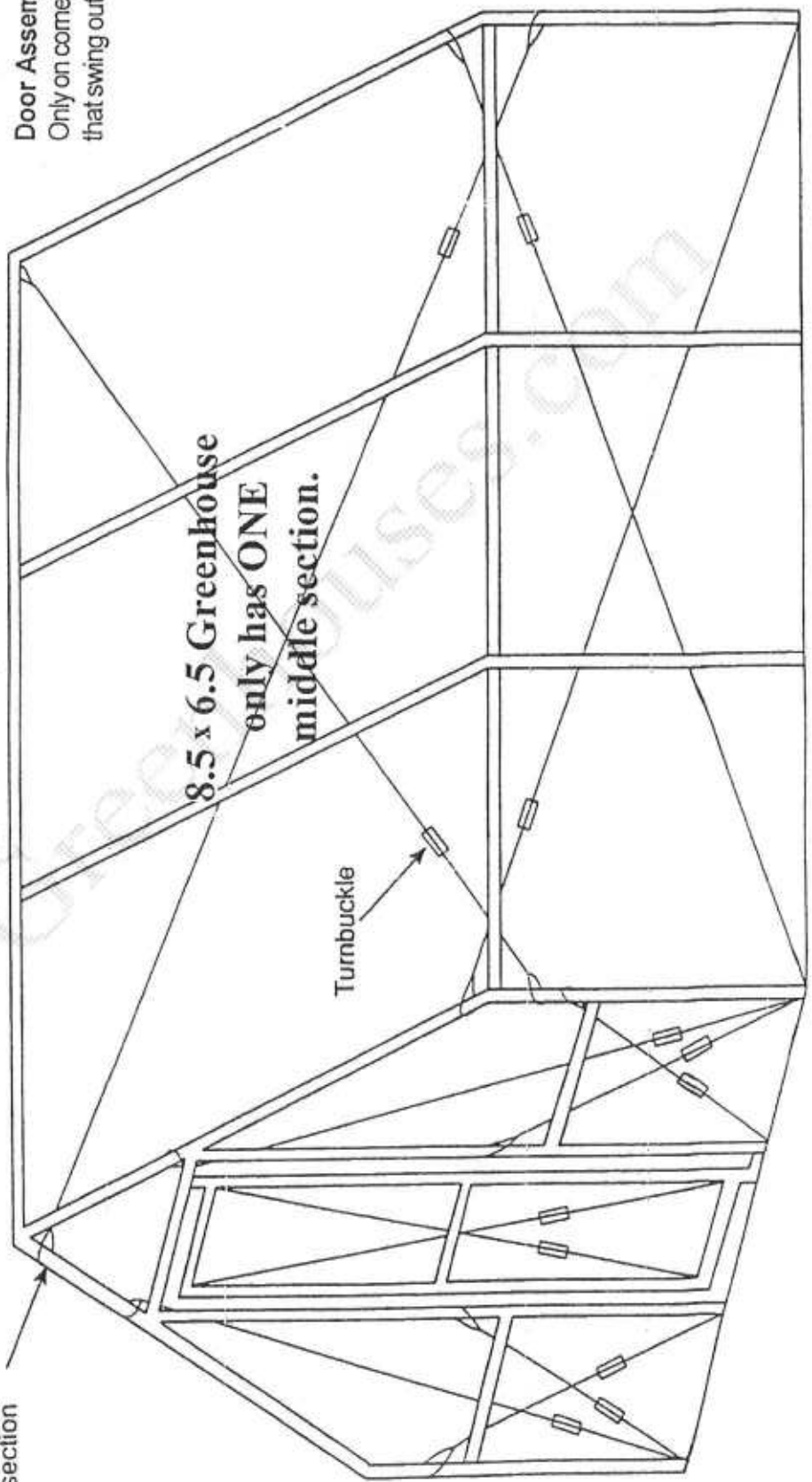
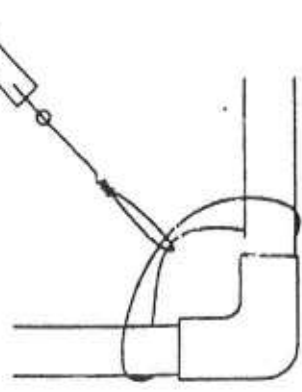


DIAGRAM 7B



Door Assembly Only on corners that swing out

Do not overtighten turnbuckles. Make sure all sides are square.

STEP #8**Installing Turnbuckles**

This step is very simple, just time consuming. Make sure all walls and corners are straight.

- A. You must first extend each turnbuckle to its fullest.
- B. We recommend installing the turnbuckles so that they can be easily reached for periodic tightening.
- C. Cut the wire that you installed and tie the turnbuckles to each cut end. When cutting the wire, try to hold both ends of the wire with your hands. This will keep the wire from springing back.
- D. Once all turnbuckles are installed, tighten each wall and roof section. This is a trial and error process to ensure that each corner is structurally parallel with all other corners.
- E. Once all turnbuckles are properly adjusted, use this next step as a preventive measure against turnbuckles loosening. Cut a 5" length of wire for each turnbuckle. Insert wire through the center of the turnbuckle. Feed each end of the wire through the eye of each bolt and fold back towards the center. This wire can be removed for periodic tightening.

STEP #9**Fan Installation**

- A. Place the fan frame on the inside of the PVC frame between the orange and light green pipe. The motor should be on the inside. Use 4 screws to hold in place. See Diagram 8.

Note: The fan should be placed so that the four screw holes line up with each of the four PVC tees in the greenhouse frame.

Fan Operation

The fan included with this greenhouse has intake and exhaust capabilities. It is being installed as an exhaust fan and should only be operated in one of the three exhaust mode speeds. Operating the fan in intake mode may damage the motor.

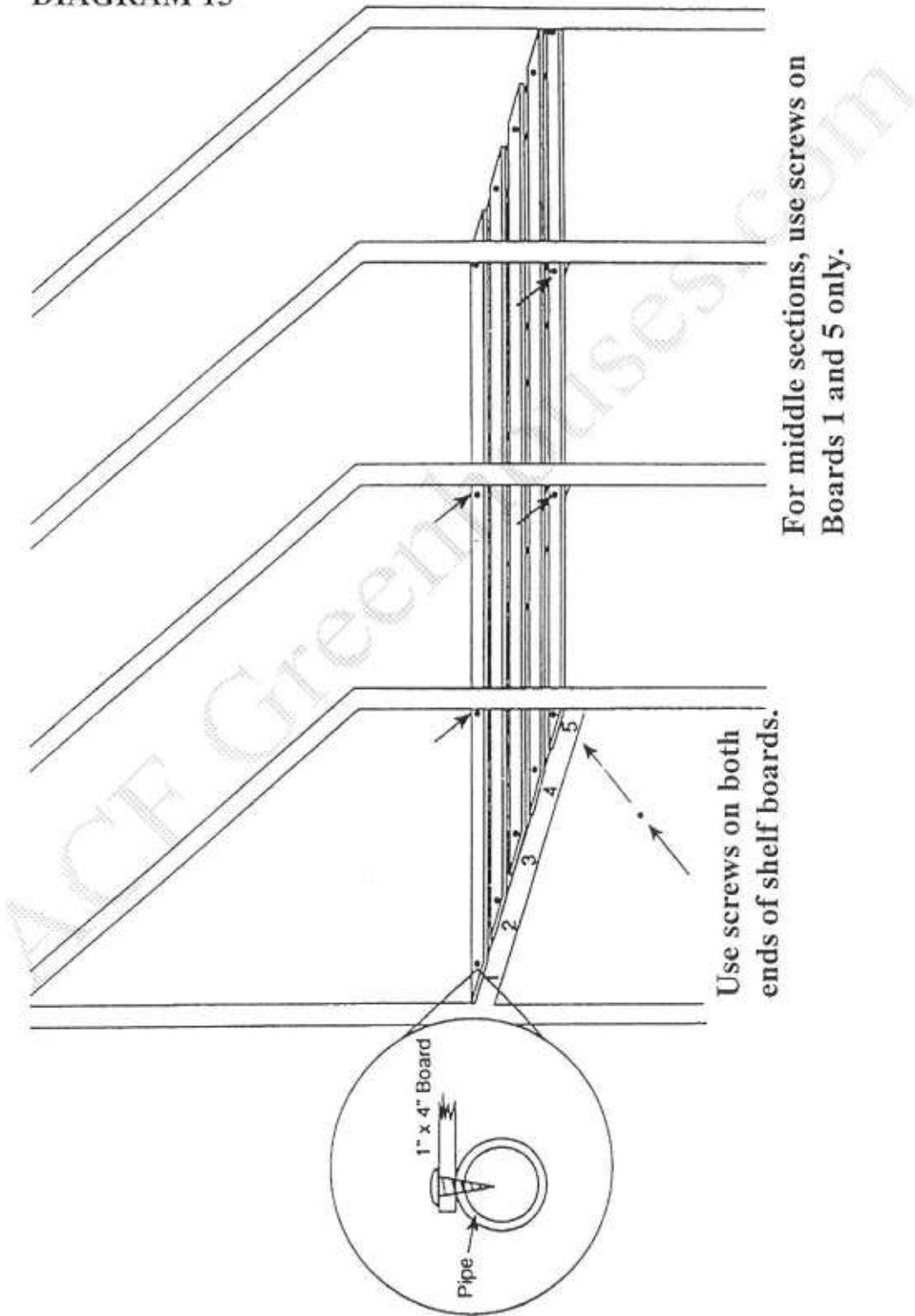
Excessive running of the fan when not needed will shorten the life of the fan motor. We recommend that you use a thermostat or timer to control the fan or cut it off manually at night.

STEP #14

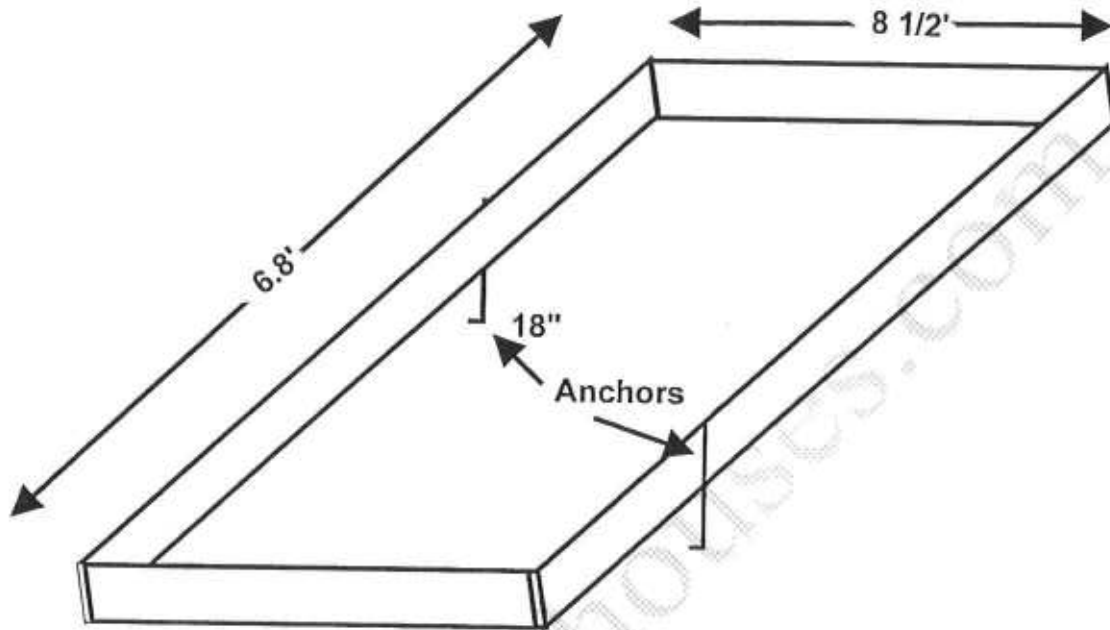
Installing Shelf (See Diagram 15)

- Requires: 10 - 1" x 4" x 8' treated boards (5 boards per shelf)
- Trim boards as shown so they will not tear plastic.
- 13' 10½" is ideal on 14' model.
- 1 ¼" flathead screws are used to secure shelves.

DIAGRAM 15



Installing Metal Anchors



- Step #1 Dig with post hole digger a 6" diameter hole approximately 18" deep. Dig hole directly under frame. You will have to move frame to dig hole.
- Step #2 Attach Anchor on outside of wood base directly over hole using wood screws. Repeat other side.
- Step #3 Fill hole with bag concrete mixed with water. Let stand overnight before next step.

STEP #10

Installing Plastic

The following lattice cuts are required.

- 2 - 79 1/2" lattice
- 2 - 8' 6" lattice Note: You can use shorter lengths for lattice.

A. Separate the 10' x 9' plastic ends. These are pre-cut but **require separation**.

B. Front and Back Wall

Center the 10' side of the sheets along the 8' 6" end walls. Position the plastic approximately 3 inches from the bottom of the foundation and tack into place using one of the lattice strips cut above.

C. The plastic should overlap each side by about 6 inches. Fold the cover upwards over the end wall and tape the overlapping part of the cover to the connecting pipes. Make sure to pull the plastic tight. Cutting off some of the overlapping plastic may make installation easier.

D. With the plastic taped to the connecting pipes, cut along each side of the connecting pipe back to the end wall which will allow the plastic to fold inwards. Do only one section at a time to keep the remainder of the plastic tight. Tape the folded plastic to the outside plastic with several short pieces of tape to keep this section tight. This tape will be removed later.

E. You have completed one end wall. Repeat this step.

F. Door Section

Once plastic is in place for both end walls, we will need to cut the plastic so the door can swing. Using a knife, cut the top of the door and tape into place. Remember to tape the door and the door frame. Once the top cut is complete, cut along the left side of the door opening section and tape into place. Doing short sections will help keep the plastic tight. Do not pull too tight. Stop cuts from running by placing a piece of tape over end of cut on top.

G. Walls and Roof

The remaining section will measure 7' x 20'. Unfold the plastic and place over the frame. Using a 7' end, tack the plastic to the base of the foundation using a lattice strip 3" inches from the bottom. Pull the opposite side of the plastic tight and tack into place using the remaining lattice strip. Pull the plastic as tight as possible. Once the top plastic is in place you will use short pieces of tape to pull the top plastic tight lengthwise. See Diagram 10.

H. Fan Plastic Section

Cut the plastic around the fan as shown in Diagram 8. Do not cut the along the top of the fan. This section of plastic will serve as a flap to cover the fan when not in use. Tape the 1/2" x 18" PVC pipe to the bottom of this flap. Tape cut plastic ends to reduce ripping from wear and tear.

DIAGRAM 8

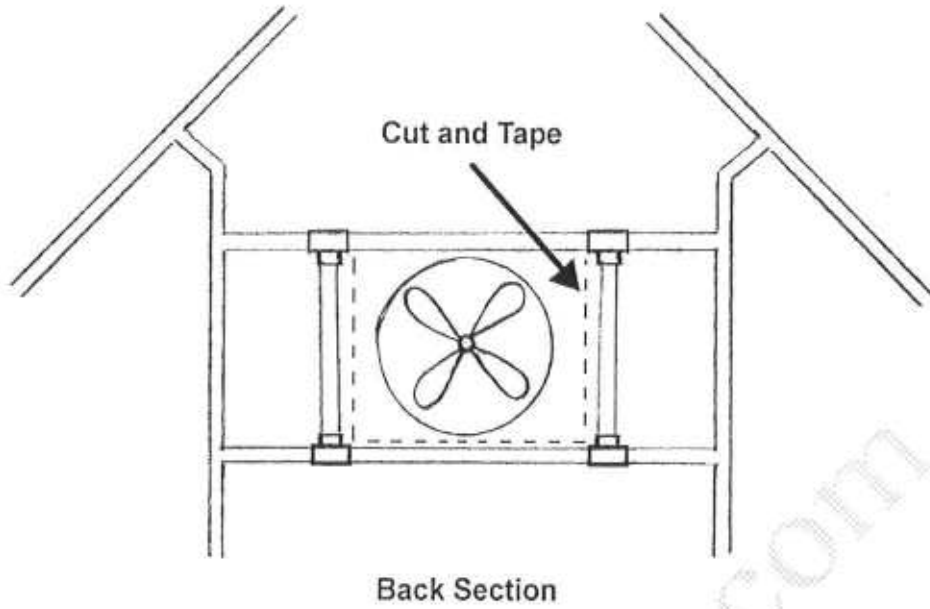


DIAGRAM 9

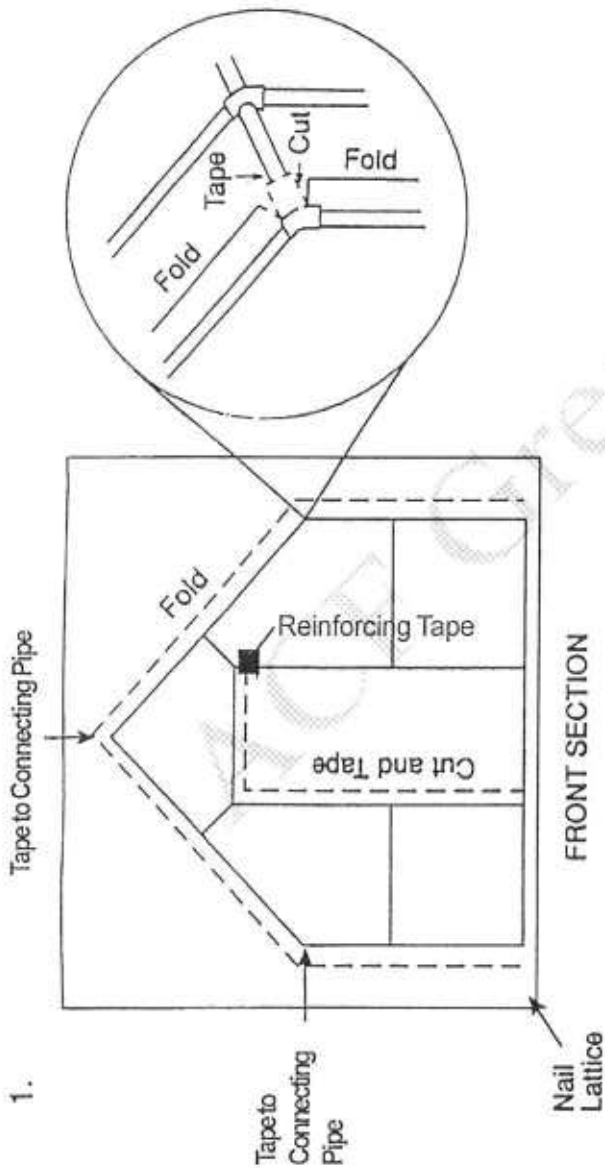
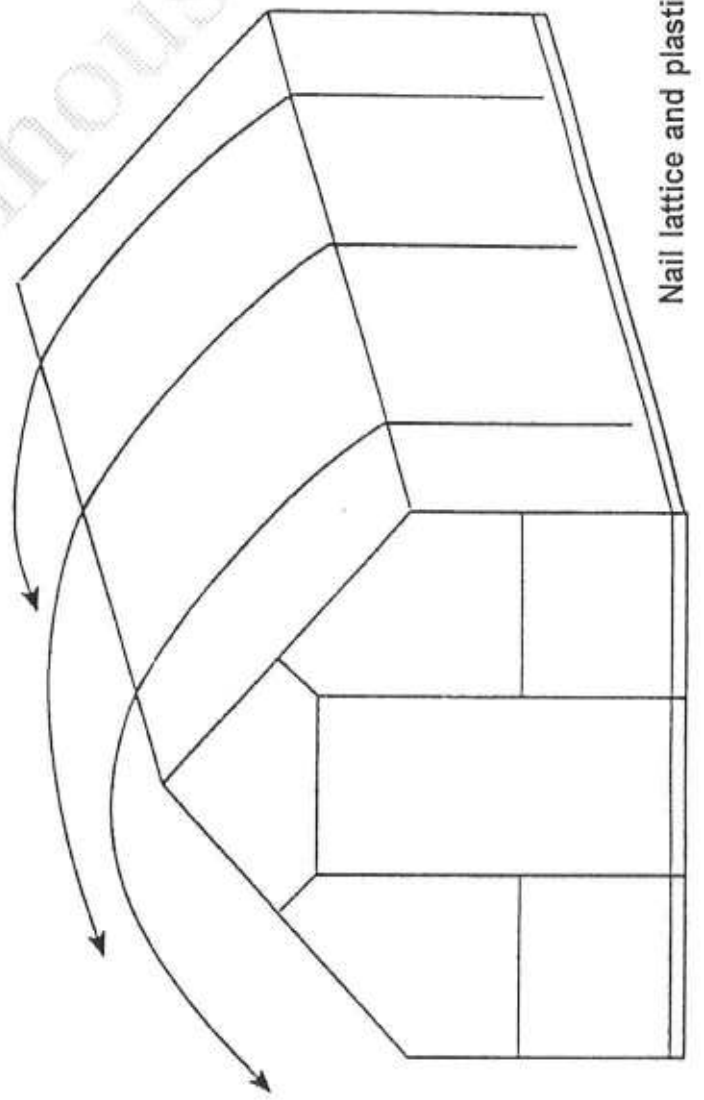


DIAGRAM 10



STEP #11**Tube Lock**

- A. Using diagrams 11 and 12, install the tube lock on the front and back wall to securely hold the plastic. The tube lock are color-coded and only the positions that require the tube lock are labeled on the drawing.
- B. Snap the Tube Lock in place.
- C. Once the plastic is tight. Use 3/4" screws 3" from each end of Tube Lock.

STEP #12**Door Weather-Stripping**

- A. The door weather-stripping is in three pieces. See Diagram 14. One for the top and two for the long side of the door. Trim the top right hand corner, as shown in Diagram 13, so that it does not cut into the plastic when opened. Use a 1/8" drill bit to make starter holes.
- B. Mount the weather-stripping as shown in the Diagram 13. Make sure the cut edges of the weather-stripping match for a tight fit. Use the screws every 6" for a tight hold. Use a 1/8" drill bit to make starter holes.

STEP #13**Door Handle Assembly (See Diagram 14)**

- A. Mount the rod on the tee in the middle of the door frame. Mount so the rod extends far enough out to reach the latch. Use a 1/8" drill bit to make starter holes.
- B. The latch will be mounted on the wall support leg so the rod reaches it and the latch will close.
- C. **Trim a small section of the weather-stripping so the latch does not interfere with closing the door. This cut is about 4" tall x 1" wide.**

Congratulations!

You have finished the construction of your Little Greenhouse.

For replacement parts or assembly help, please contact customer service at:

help@LittleGreenhouse.com

or

888-888-9050 x 227

DIAGRAM 11

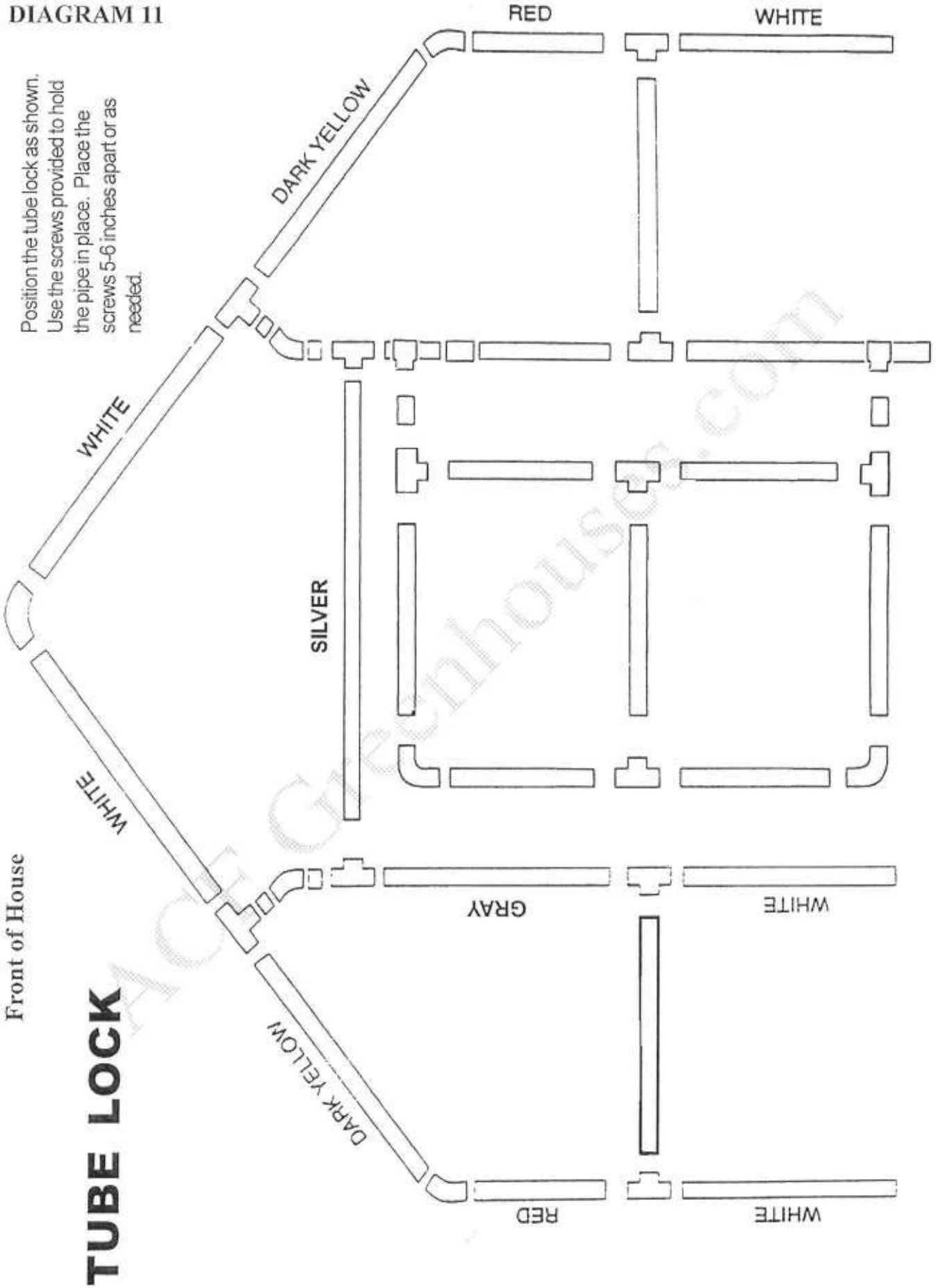


DIAGRAM 12

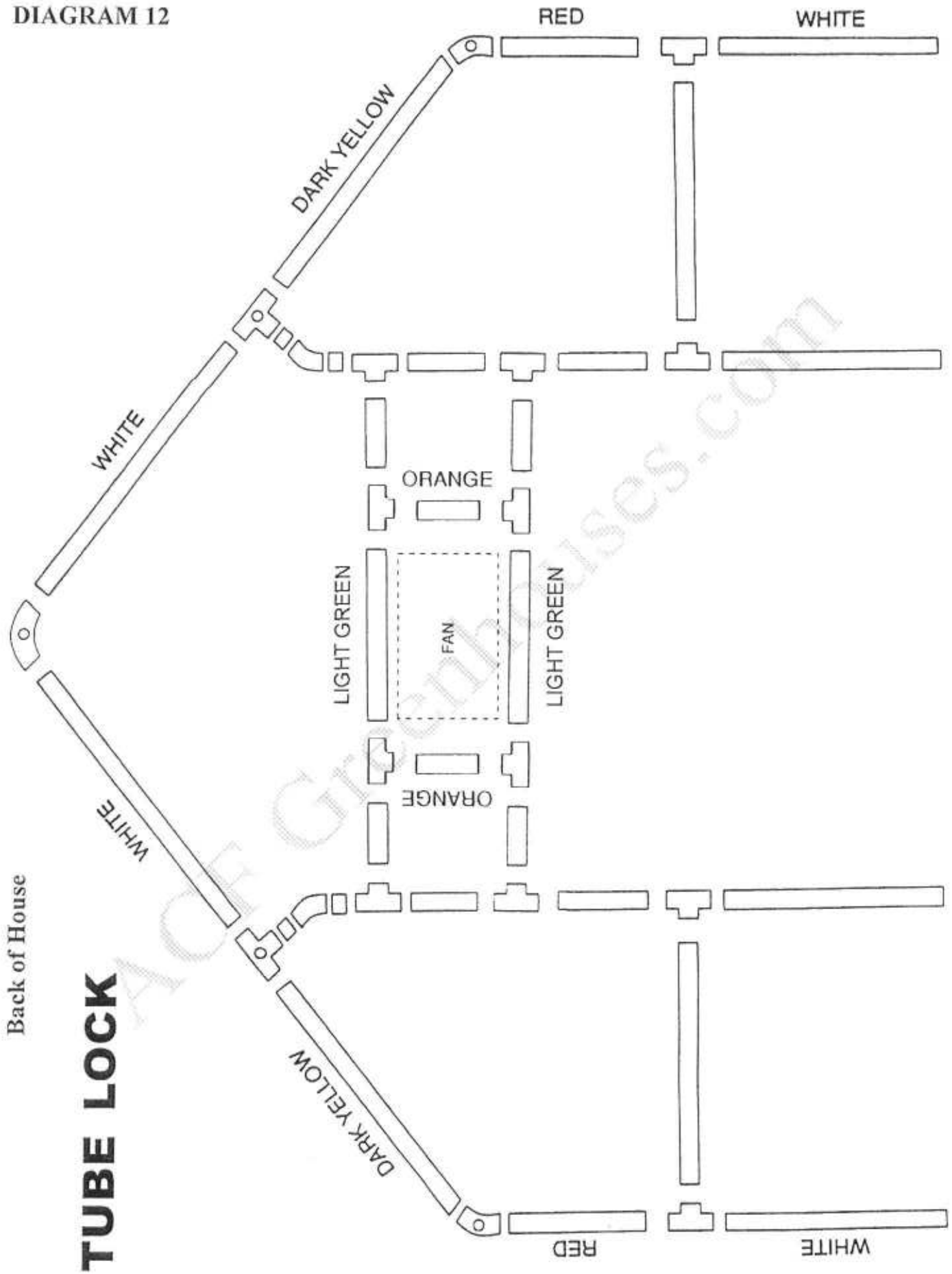


DIAGRAM 13

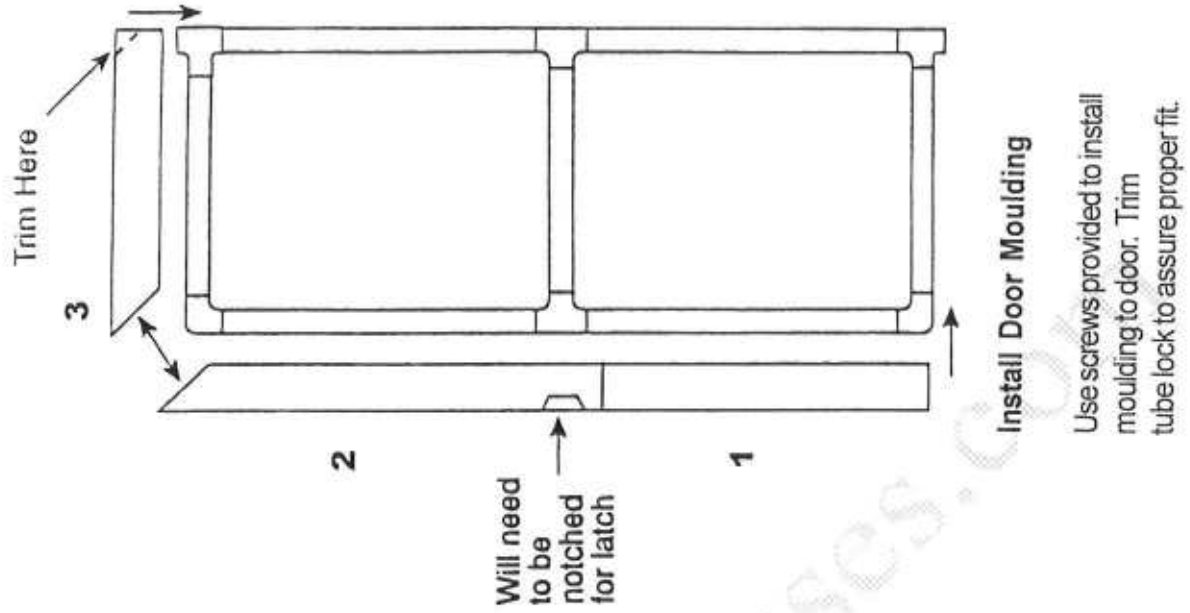
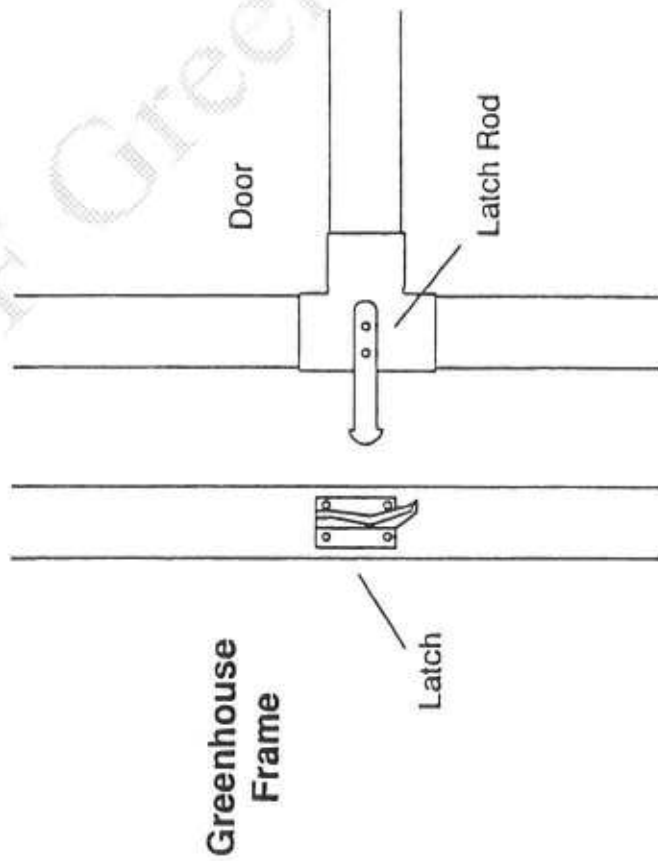


DIAGRAM 14



Little Greenhouse Shade Cover Installation Instructions

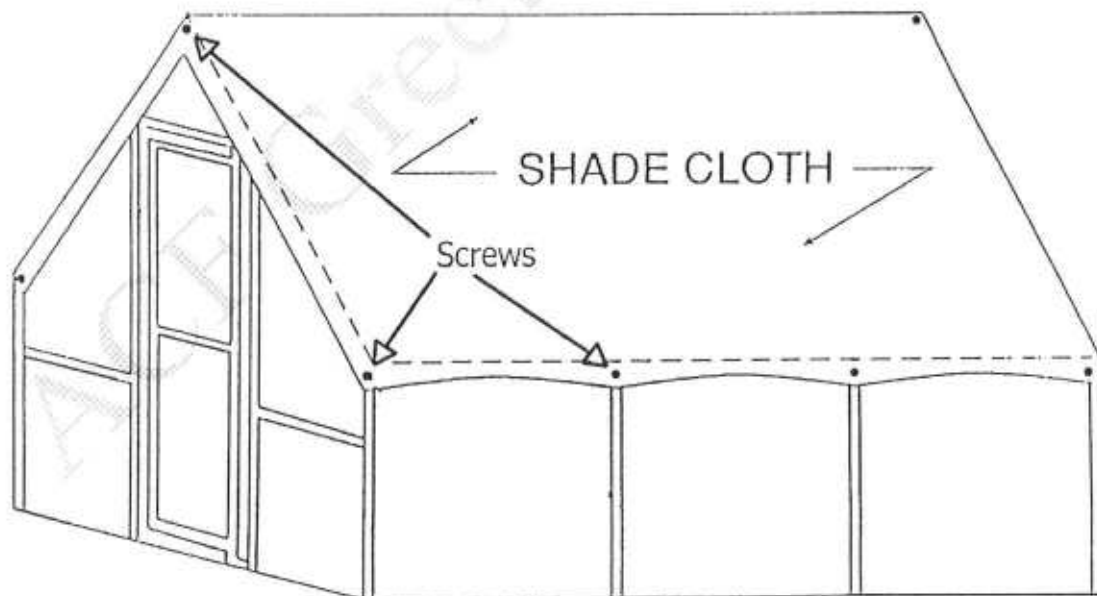
The shade cover is made to fit and designed to keep your greenhouse plants cool during those high temperature days. The fabric is manufactured to decrease temperatures from 10 to 25 degrees. The shade cover size included will provide your greenhouse with optimal shading, but the fabric can be cut to any length or width you desire. The shade cloth may also be used to add protection to your greenhouse plastic film during harsh weather conditions.

Directions for use: (View diagram below for additional help)

Step 1: Place one screw into each of the corner 3 way elbows at the top of the greenhouse. Leave screws sticking out about half way.

Step 2: The screws used to secure the shade cloth along the sides will be screwed into the center of the each 45 degree elbow where the roof and sidewall pipes are connected, not into the red pipe. The fittings provide a stronger hold for the screws than the red pipe. Leave screws sticking out about half way.

Step 3: Apply the shade cover to the screws. It can be taken off whenever you feel you no longer need it and can be put back on by simply pulling it over the screws.



Little Greenhouse Misting System Installation Instructions

| Parts List | 8565 | 8510 | 8514 |
|-------------------------|------|------|------|
| 3 GPH Mister | 6 | 10 | 14 |
| 1/2" Misting Tee | 6 | 10 | 14 |
| 1/2" 90 Elbow | 2 | 2 | 2 |
| 1/2" Coupling | 1 | 1 | 1 |
| 1/2" Cap | 2 | 2 | 2 |
| 1/2" 3 Way | 1 | 1 | 1 |
| 1/2" Tee | 1 | 1 | 1 |
| Hose Connector | 1 | 1 | 1 |
| Auto Drain Valve | 1 | 1 | 1 |
| ADV Connector | 1 | 1 | 1 |
| 4 oz. PVC Glue | 1 | 1 | 1 |
| Teflon Sealing Tape | 1 | 1 | 1 |
| Bag of Cable Ties (10) | 1 | 1 | 1 |
| Bag of 3/4" Screws (10) | 1 | 1 | 1 |
| 1/2" x 31 1/2" PVC Pipe | 1 | 1 | 1 |
| 1/2" x 24" PVC Pipe | 6 | 10 | 14 |
| 1/2" x 12" PVC Pipe | 2 | 2 | 2 |
| 1/2" x 4" PVC Pipe | 5 | 5 | 5 |

Before assembling misting system, inventory all parts using the parts list. Make sure all PVC pipe and all fittings are completely free of debris. Remove any PVC shavings from the outside edges and interior of pipes/fittings, then flush with air or water to clean.

GLUING PVC PIPE AND FITTINGS

Connect PVC pipe to fittings by liberally applying PVC cement to the inside of the fitting and the outside of the pipe (See Diagram 1). Push pipe fully into fitting and twist 1/4 turn to evenly spread the cement as each piece is glued together and provide a watertight seal. Assemble parts QUICKLY after applying cement to prevent it from drying. If the PVC cement has dried, repeat process. Hold pipe and fitting together for 30 seconds. Wipe off excess cement. Allow a minimum of 1 hour for pipe to dry before flushing with water. Some fittings have a threaded hole. **DO NOT GLUE ANY THREADED HOLES**

Diagram 1

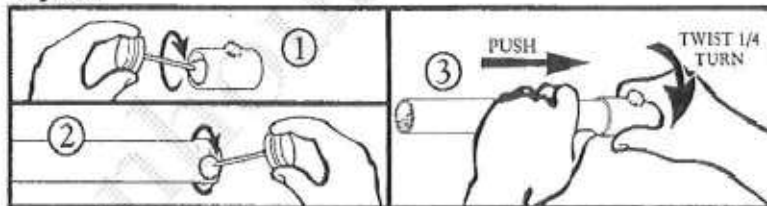
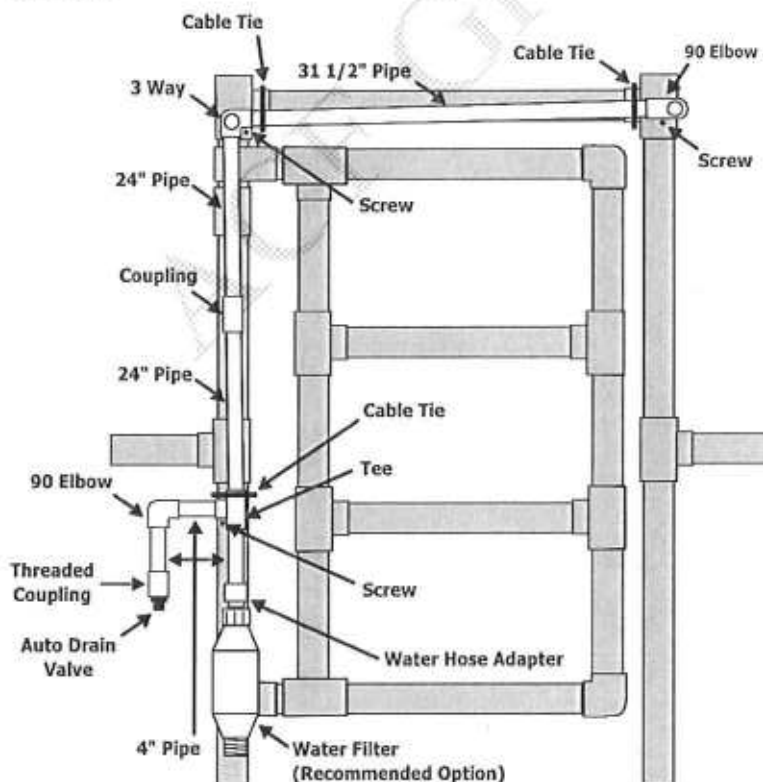


Diagram 2

31 1/2" pipe should have a 1/2" upward slope to 90 elbow



MAIN LINE ASSEMBLY

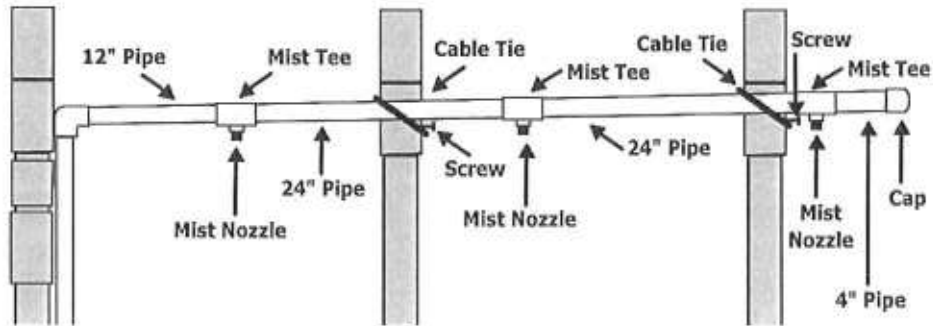
Lay the parts shown in Diagram 2 on a clean surface and glue each part together. **DO NOT** attach the auto drain valve or the water filter (option) at this time.

Measure 1/2" from the bottom and right hand side of the 1" PVC Tee that the 3 Way connector will be secured to. Fasten a 3/4" screw to the 1" PVC Tee screwing it in only half way (The screws help support the mist system and keep it from shifting). Place the assembly against the door frame as shown in Diagram 2 allowing the 3 Way connector to rest on the screw. Secure it to the door frame with a cable tie as shown in Diagram 2.

Fasten another 3/4" screw under the 1/2" Tee at the bottom of the mist system (Screw it in only half way), and secure it as shown with a cable tie.

For the 90 Elbow placement, you will measure 1" from the bottom of the 1" Tee on the door frame, and fasten a 3/4" screw to the 1" PVC Tee screwing it in only half way. Secure it as shown with a cable tie. **NOTE:** It is important that the 31 1/2" pipe has an upward slope towards the 90 elbow. Doing so prevents misting nozzles from dripping by allowing all of the water in the misting line to drain to the auto drain valve after the mist system is cut off. You are now ready to mount the mist line.

Diagram 3

Mist line should have $\sim 1/2"$ per $3'$ upward slope to PVC cap

MIST LINE ASSEMBLY

Lay the parts shown in Diagram 3 (above) on a clean surface and glue each part together. **DO NOT** attach the mist nozzles at this time.

Measure $1\frac{1}{2}"$ from the bottom of the first 1" PVC Tee and fasten a $\frac{3}{4}"$ screw to the 1" PVC Tee screwing it in only half way (See Diagram 4). Secure it as shown in Diagram 4 with a cable tie. The mist tee should be mounted at a slight angle towards the middle of the greenhouse bench to provide proper misting coverage for plants. Repeat as necessary adding $\frac{1}{2}"$ to the screw height on each 1" Tee every time (This allows water to drain to the auto drain valve and out of the misting pipe when the water is turned off).

FLUSHING THE LINE

Allow a minimum of 1 hour for pipe to dry before flushing with water. Attach the water filter (Option shown on Diagram 2) to the mist line before flushing. Turn water on at full pressure for a few minutes to flush out any dirt or debris from inside the mist line. Turn off water. You are now ready to assemble the auto drain valve and mist nozzles. Before screwing them into place, wrap the threaded area of each part 4 to 6 times with the Teflon sealing tape (This will provide a watertight seal when they are screwed into the fittings). Pull the sealing tape tight when wrapping it around the nozzles and auto drain valve. When done, insert the nozzles into the threaded hole of the mist tees, and insert the auto drain valve into the threaded end of the ADV threaded coupling. Hand tighten these parts, and then give one full turn with a wrench (Do not over tighten). Turn the water on and check for leaks around the mist nozzles and auto drain valve. If leaks are present, tighten with a wrench as needed.

After the pressure drops enough from turning the water off (This can take a few minutes), the auto drain valve will open and drain the remaining water from the mist line. It stays closed when water pressure is supplied. The mist system is now completed!

LITTLE GREENHOUSE MISTING SYSTEM ACCESSORIES

We offer several controls on our web site at www.LittleGreenhouse.com that you can automate this misting system with:



Prewired Solenoid Valve

Commercial solenoid valve is useful for cutting the flow of water on and off and can be automated with any of the controls to the right. Control comes with an 8' power cord.



Prewired Thermostat

This control automates solenoid valves based on temperature. Simply set the desired temp. you want to maintain in the greenhouse, and it will cut the misting system on and off based on that temperature



Prewired Humidistat

This control automates solenoid valves based on humidity. Simply set the desired humidity % you want to maintain in the greenhouse, and it will cut the misting system on and off based on that temperature.



Repeat Cycle Timer

This control automates solenoid valves based on set on and off time intervals. Simply set the desired on and off durations, and it will cut the misting system on and off based on the selected intervals.

Diagram 4

