

NOLT'S MIDWEST Produce Supplies

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Greenhouse Frame Assembly/Installation Instructions

When you receive your frame check that you have everything as indicated on the list in the hardware box.

Level the building site. Square the site using string and stakes, from 1 corner measure 30' on gable end and 40' on one side and square by measuring 50' cross corner. For best wind load resistance. Dig holes and pour concrete to set ground stakes in, otherwise used included ground stake driving head (bolt) and pound them in with sledge hammer. Place ground stakes on center as per the arch spacing and overall length of your greenhouse. Keep the tops level. The ground stakes will also be the sidewall install them 24 to 44" deep so that they give the correct sidewall height as specified on Parts List, (add 4" overlapp and subtract the length of straight side already on arch).

Before installing the baseboard you may want to roll out your ground cover and pull it outside the frame 6 -12", cutting holes for the ground stakes (this will help control any weeds that will grow right inside or outside the baseboard).

Install your 2x8 or 2x10 treated wood baseboards outside of the ground stakes at least 3" below ground level. Cut them to length so they splice center of the stake. Secure them with pipe straps and lag bolts at the top and bottom of board. Put 1 Tek Screw thru each strap into stake.



If you have a loader/lift available to set the arches, on a hard level surface assemble the arch halves with center coupler using two #12 x 1" teks screws per connection (do not put them on top of arch to avoid tearing the plastic). You can also assemble the cross braces (be sure the bottom of the arches measure on center per your frame width and note both end arches don't need any crossbraces) to the arches but keep it mind that they may limit you ability to take loader/lift/work platform inside! They can easily be installed even after the plastic is on.

Set the assembled arches onto the stakes, Fasten with 2 Large #14 x 1" Tek Screws

or 1 Bolt if Stake is not swedged and has hole drilled thru it.

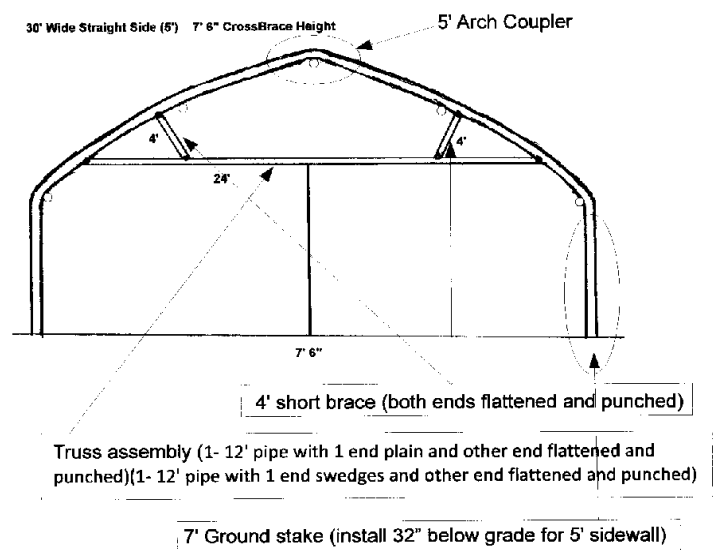
Wind braces (a couple of pieces of purlin pipe) should be installed next at each corner, fasten them on inside of the end arch at the top of the straight side with the other end lying on the ground. Level the arches before fastening them. They are fastened with pipe straps and three #12x1" Tek Screws (one through each hole into arch and one into purlin pipe).



Purlin pipes run the length of the frame inside the arches, always one at the peak and generally 1-3 on both sides. Always fasten the Purlin pipes at the peak and top of straight side with pipe straps and three #12x1" Tek Screws because cross connectors will tear the plastic with time.

Other purlins are generally fastened with cross connectors for more strength. Install the lower purlin pipes on the inside of the arches in the middle of the curve above the straight side (Level the center arches before fastening). Note that if you are doing roll up sides you will not need the lower purlin pipes since you will need to put something to secure the plastic on the outside (usually double wirelock or single wirelock and a 2x board) and you can than use that purlin pipe as your rollup pipe.

Fasten the the center purlin making sure the arches are straight and space out the rest of the purlins in between.



Truss assembly and short braces are to fastened to the bow with brace bands and carriage bolts.

Cross braces are secured at each end with brace bands and carriage bolts keeping them level, Short upright braces are also fastened with brace bands and carriage bolts, space them evenly along the length of the crossbrace.

Gable end baseboard should be installed flush with outside of arches, treated wood or metal/aluminum should be used to secure and frame the gable end and hang doors. 2x4 end wall brackets are available to fasten the treated wood to arches. Gable ends are generally framed vertically on 6-8' centers and horizontally on 4-5' centers. You will need to frame for any fans or shutters you will be installing.

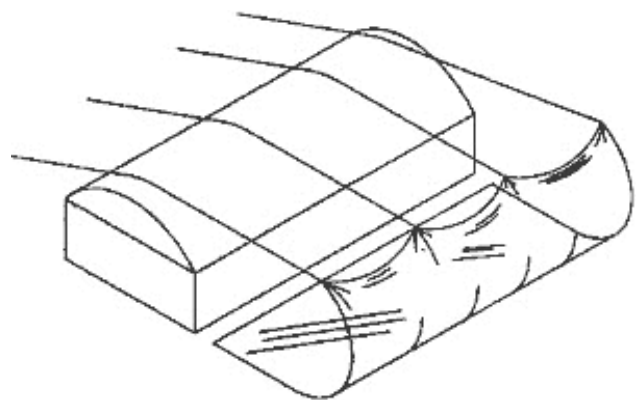
To cover gable ends with polycarbonate sheeting, Put vent tape on bottom edge of sheets and fasten with 1-1/2" screws and 1" washers every 6" along the baseboard. Check the label on the sheeting as it requires you to put a certain side toward the outside (sun). Fasten sheeting with single h along the straight side of arch, slide a double H onto other side and fastened with screws through the center of the double H into horizontal framing. Also put 2-3 screws with 1" washers through the sheets into horizontal purlins. The end of the main plastic covers can then be taped to the polycarbonate.

To cover gable ends with plastic start at the bottom and staple every 2-3" through batten tape into the wood framing. At the top of the arch plastic can be secured into the wirelock when the main cover is installed. For double layer with an air space simply cover the inside of the frame with another sheet of plastic.

The main plastic is generally 2 layers secured with wirelock with 2 zig-zag wires. Fasten wirelock along the baseboard with 1-1/2" tek screws every 12" and onto the top of the end arches with 1" tek screws. Pick a calm day or you might end up flying a huge kite!. Unroll one layer plastic alongside the greenhouse using a pipe and keeping the roll off the ground. Fasten ropes to the one edge of the plastic about every 25 ft using tennis balls, etc. Tie the rope around the neck of the bubble of plastic around the ball. Pull the plastic across the frame slowly and evenly. Having someone inside with a ladder is helpful to loosen any snags and help it over the peak. Center the plastic on frame and tighten end ways and secure with 1 or 2 pcs of zig-zag wire at the top of the arch. Start installing the zig-zag wire on the sides in the center of the house and pulling tight both ways. Be sure to push the wirelock all the way into the channel. Do both sides than loosen the ends, retighten and secure. Install the inflation blower mounting bracket put nut on the outside of the plastic. The 2nd layer is done the same way except don't tighten it across the frame only end ways as it needs to be able to expand for inflation. Put the 2nd layer on ASAP because after the plastic weathers a little it will pull across much harder and also before it flops in the wind and blows off! Maintain air pressure between the covers at all times.

Thank You and feel free to call with any questions and with any input on our design!

P.S. The parts list also includes lots of information, plus our catalog has pictures/illustrations.



Fasten center purlin with pipe straps instead of cross connectors and 3 #12x1" Tek Screws as cross connectors will tear the plastic with time

Fasten purlins together with 2 #12x1" tek screws

Truss fasten with brace bands with 5/16" x 1-1/2" carriage bolts & nuts

12' Crossbrace halves fasten with 2 #12 x 1" Tek Screws

What you are trying to avoid, Using all the fasteners at the right place would likely have helped.

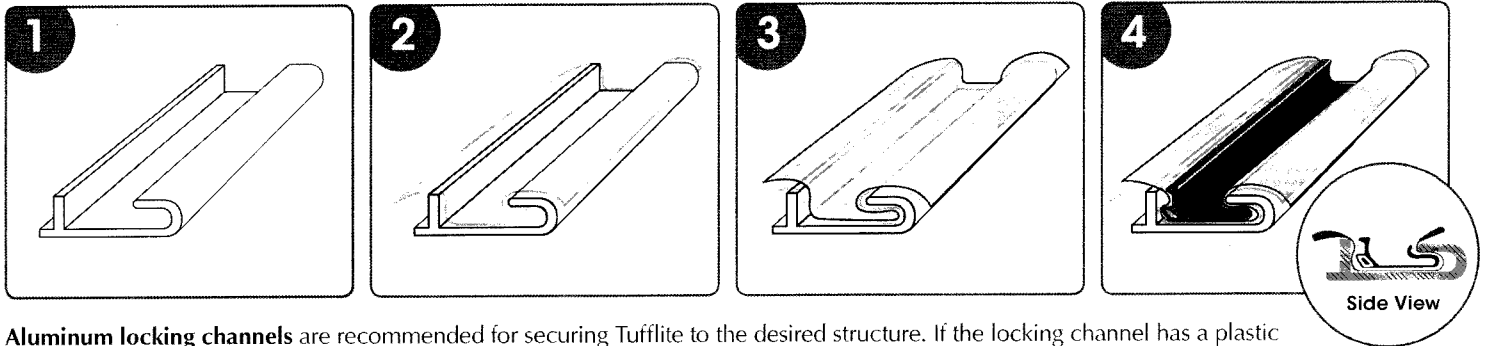
Fasten arches to stakes with 2 large #14 x 1" Tek Screws



Get the maximum service from Tufflite™ brand UVI copolymer greenhouse coverings by following the instructions below.

Please read the instructions completely prior to installation.

Option 1 - Aluminum Locking Channel Installation



Aluminum locking channels are recommended for securing Tufflite to the desired structure. If the locking channel has a plastic liner that contains a plasticizer (or if the framework is PVC pipe), an extra layer of polyethylene film between Tufflite and the plasticized material (or PVC pipe) will alleviate any chemical reactivity with the covering material.

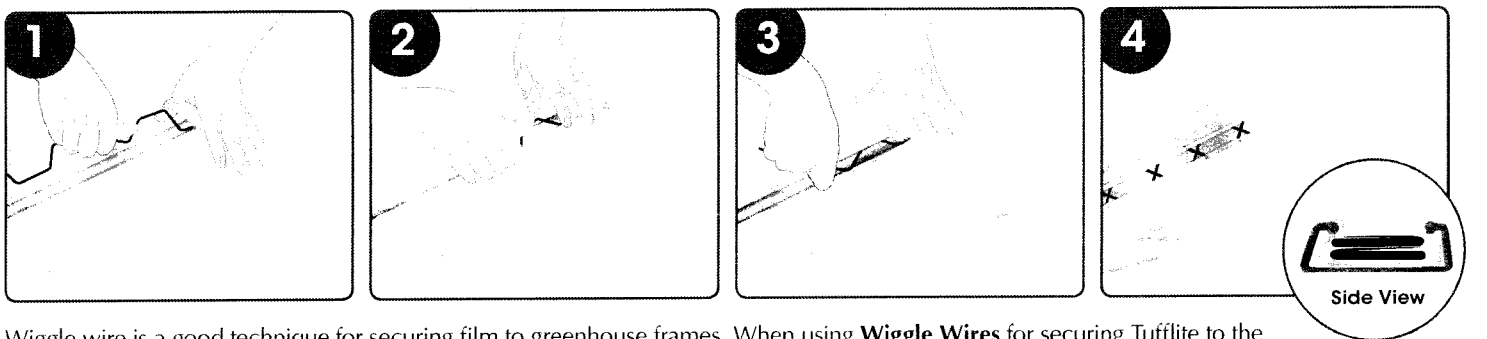
Apply a heavy coat of industry approved white latex paint to all locking devices including the poly to approximately 4" above the lock.

NOTE: DIRECT CONTACT OF THE POLYETHYLENE WITH THE PVC PIPE IS NOT ADVOCATED.

Troubled with the poly (PE) slipping in the lock? Could be the poly or, could be the lock. Try a narrow strip of PE in the lock - running the length of the house - to give extra bulk.

Note: Roughing the contact points of the lock with a very fine (240 or 260) sandpaper has been found to be helpful.

Option 2 - Wiggle Wire Installation

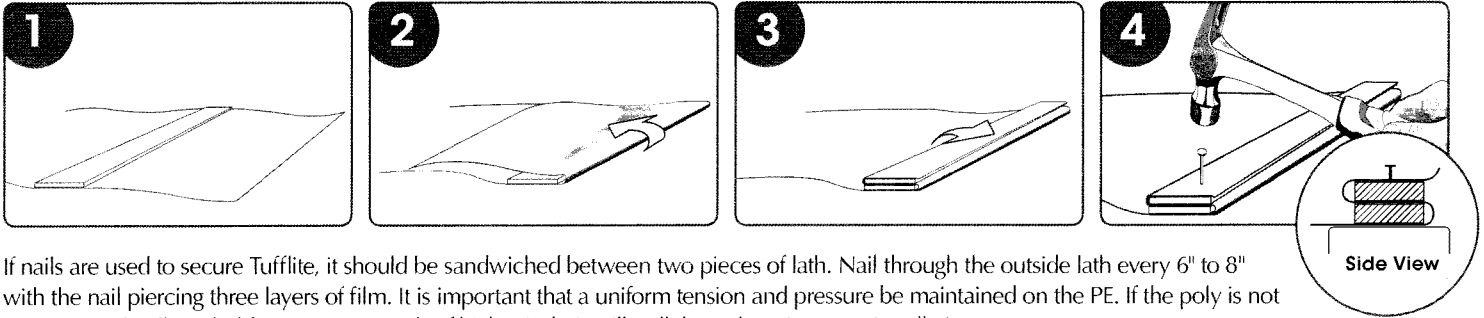


Wiggle wire is a good technique for securing film to greenhouse frames. When using **Wiggle Wires** for securing Tufflite to the desired structure make sure to use a full single wire minimum and use a second wire in areas subject to high winds and severe weather. You can overlap two full wires going in the opposite direction or use a short strip to hold the film in and use a second full length wire in the entire channel to tighten it down.

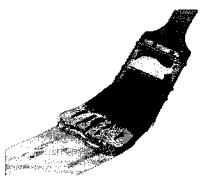
Measure and then cut the heavy aluminum base to length, file the cut ends to reduce the likelihood of the plastic tearing on a sharp end. Drill holes in the aluminum base for the screws, then use galvanized flat-headed screws to attach the base to the frame. Wiggle wire expands in length when inserted, if you cut the wiggle wire too long you will need to trim the end once installed. Wiggle the wire into the base channel, up, then down, while pulling the poly as taut as possible without tearing the film.

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Option 3 - Nail Installation



If nails are used to secure Tufflite, it should be sandwiched between two pieces of lath. Nail through the outside lath every 6" to 8" with the nail piercing three layers of film. It is important that a uniform tension and pressure be maintained on the PE. If the poly is not secure, a nail will not hold it. During periods of high winds, it will pull through an insecure installation.



Note: Apply a heavy coat of an industry approved white latex paint over unpainted or treated wood. Allow the recommended curing time before covering. Dark surfaces absorb solar heat—contact with such areas causes premature thermal degradation of the polyethylene covering.

Continued Installation Instructions

5. Apply two layers of sheeting or one roll of tubing to form an **air space (bubble)** in areas where wind imposes repeated stress. Single layer installations may not have sufficient resistance to wind damage due to repeated flexing.

Note: Growers use a single layer at their own risk.

6. Outside air, with its lower moisture content, is recommended for the inflation in the **air space (bubble)**. Warm air from the inside of the greenhouse, with its higher level of moisture, is a source of condensation when it is introduced into the cooler atmosphere in the **air space (bubble)**.

Note: Moisture trapped between the layers of poly has a tendency to reduce light.

Temperatures under the inside layer of covering can reach high levels during daylight hours and there is always the possibility of thermal degradation. Inside air, oxygen, and often heavily used greenhouse chemicals be another source of premature degradation of the poly.

Care should be taken to locate the inflation air intake tube at a point where it will not be blocked by snow or become filled with water.

Note: It is important when introducing the air into the bubble that it be blown in obliquely rather than directly on the film.

Proper air pressure in the bubble is extremely important. Use of a simple manometer is recommended.

At approximately 1/4" of water, the air space (bubble) is properly inflated.

Care & Maintenance



After installation, avoid surface contact or extended exposure of the covering to herbicides, pesticides, fungicides, and more specifically, bromine, chlorine, fluorine, iodine, sulfur, petroleum based chemicals, and/or wood preservatives containing copper.



For a complete list of chemicals that when in contact with Polyethylene can lead to premature degradation, please call your local Berry Tufflite Distributor or Berry Plastics 1.800.845.0124.



Small tears in greenhouse film can be patched with greenhouse film tape. Only approved greenhouse repair tape should be used to avoid degrading the poly. Duct tapes are not an approved repair tape as the adhesives can degrade the film and the tape does not transmit light.

Please call your local Berry Tufflite Distributor or Berry Plastics 1.800.551.5036 with any questions prior to installation.

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Harmful Chemicals

Chemicals that can be harmful to greenhouse film's function and life span

Polyethylene is highly resistant to many chemicals (muriatic acid, for example, is sold in polyethylene bottles), but not to all chemicals. Organic chemicals are the greatest threat, so follow these rules:

1. Don't put solvent chemically treated wood in contact with greenhouse film.
2. Herbicides, insecticides, fungicides, and fumigants commonly used in greenhouses may affect some greenhouse films and cause them to resist U.V. sunlight for a shorter time. Try to avoid direct contact with the film.
3. Avoid using chlorinating solutions or household bleach as a disinfectant, instead use BASF Green-Shield® Disinfectant & Algicide, a biodegradable liquid concentrate, Physan 20™ an Algaecide, Virucide, Bactericide, and Fungicide liquid concentrate or Safers® Demoss, a soap.

List of Potentially Harmful Chemicals

Banrot™	Sulfur
Chloropicrin	Permethrin (other synthetic pyrethroids)
Chlorine gas	Captan*
Chlorpyrifos	Diazinon*
Dithiocarbamates	Mancozeb
Fluvalinate	Copper sulfate
Vinclozolin	Chlorine bleach
Dienochlor*	Hypochlorite (swimming pool chemicals)
Chlorothalonil*	Formetanate Hydrochloride
Pentachloronitrobenzene	Bromoxynil
Oxamyl	Iprodione
Chlormequat Chloride	Silver Thiosulfate
Methyl Bromide	Methomyl
Bromine gas	Metam-sodium

*Trade names only used when a generic name could not be found for the chemical or combination of chemicals.

The above list does not intend to represent a complete list of all chemicals that can potentially be harmful.

It is therefore recommended that caution be taken to limit the contact of chemicals with greenhouse film to prevent premature degradation and the reduction of film life.

If you have any questions regarding this, please contact your Berry sales representative, your Berry distributor, or phone Berry directly at 800-551-5036



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Agricultural Film