



Highlander Super Strength Instructions

Introduction

Thank you for purchasing your **Highlander Super Strength** polytunnel. Before you begin to build, we strongly recommend you read the instructions thoroughly.

Take time to check all the parts are present and make sure you have the correct tools to build your polytunnel. It is advisable to leave adequate working space around your polytunnel for maintenance, operations and re-covering.

Safety

Always wear gloves when constructing as there may be sharp edges.

Always use the correct tool for the job.

Consider other people around the site of your new polytunnel, particularly children and animals.

Take care when using sharp tools.

Wear safety glasses when attaching 'W-Wire' and ensure that any other persons in close proximity do the same.

Keep your work area tidy and organised. A tidy work area is a safe work area.

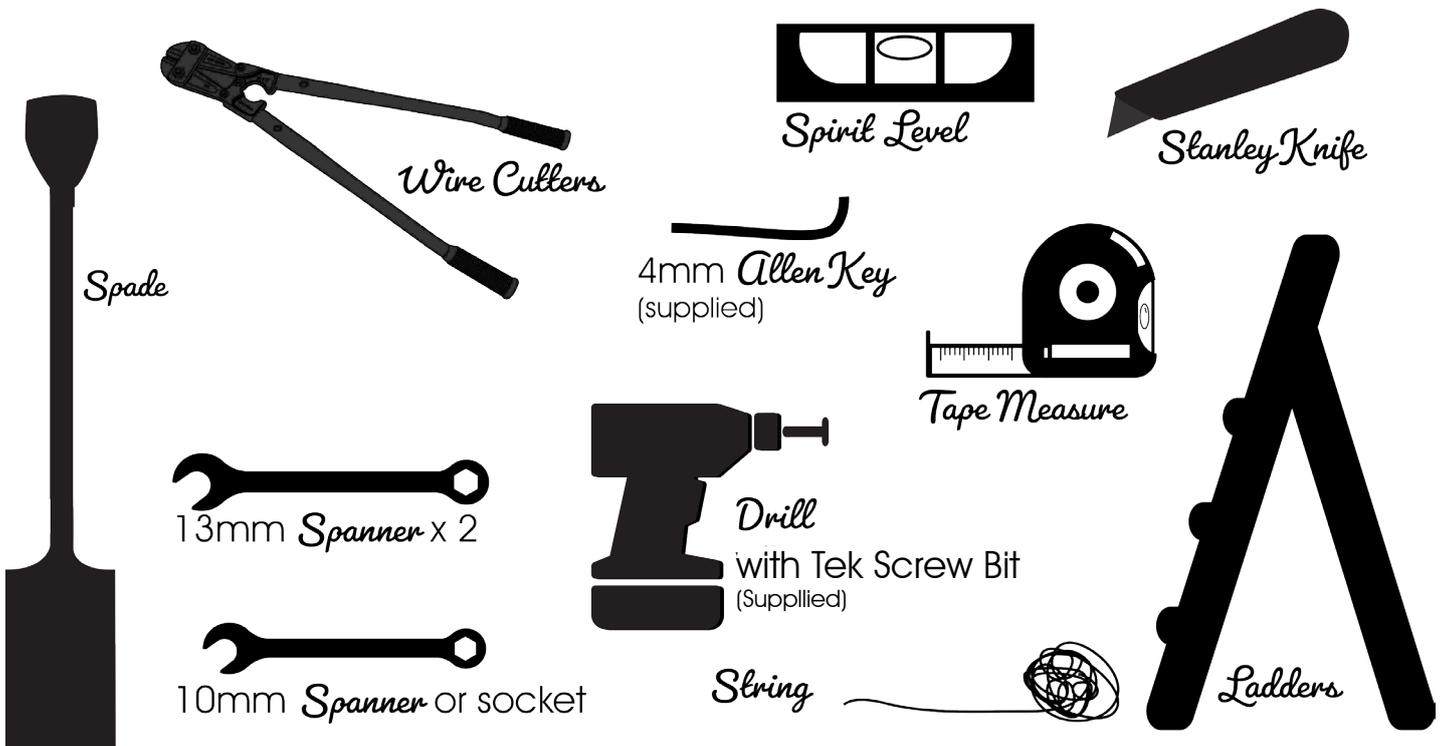
Tie back any loose hair and wear suitable clothing and shoes.

Take care when lifting heavy items of your kit.

When using ladders ensure they are on firm level ground.

It may be advisable to position step ladders on a large sheet of plywood if the ground is soft.

Tools Required



Frame Fitting Packs

Every step of the **Highlander Super Strength** polytunnel has been put into easy stages. Each of those stages has been put in to fittings packs.

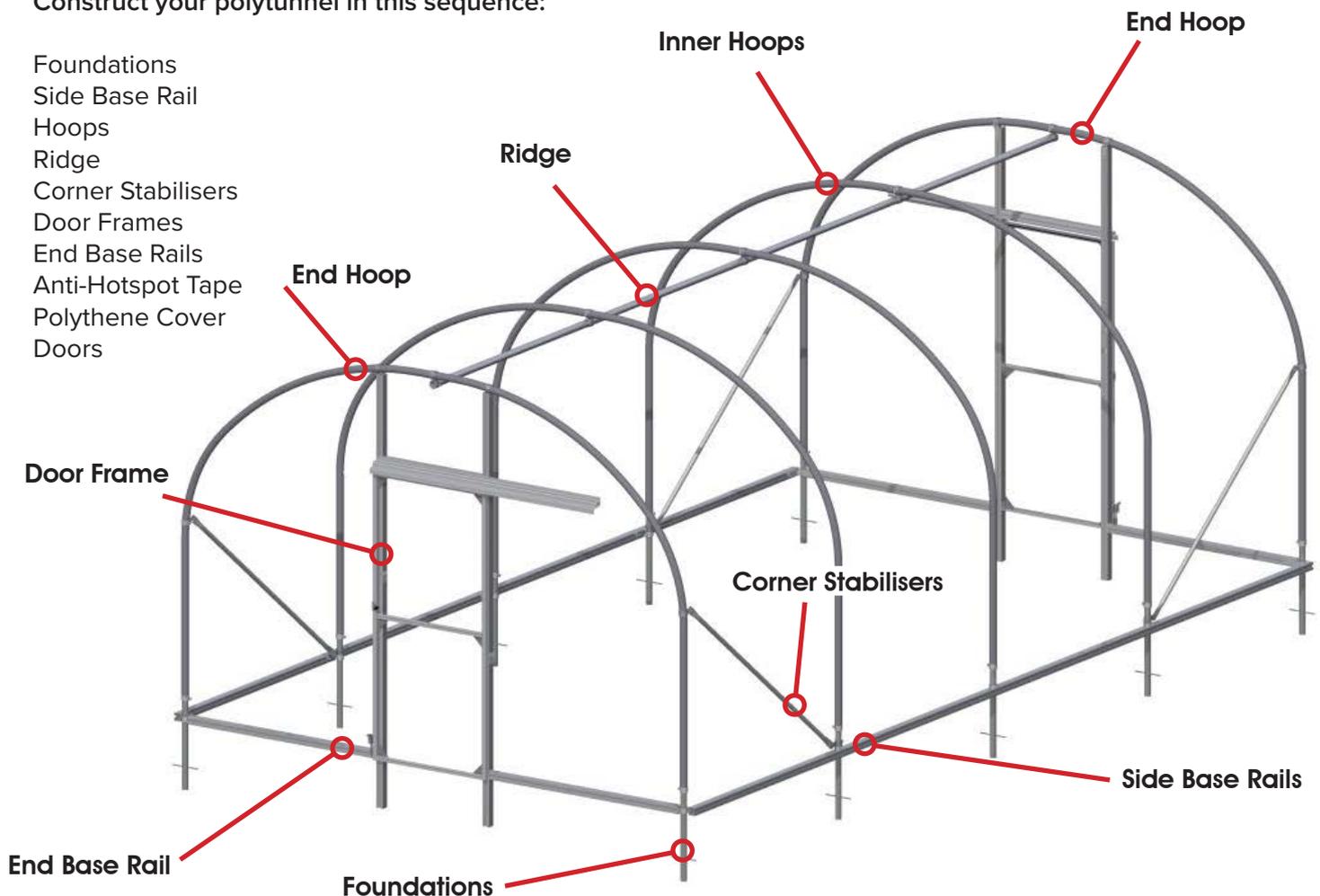
As you read through the instructions we will refer to these packs.

When using the packs you may find you do not need all the parts, bolts nuts etc. at that stage, we recommend that you keep any unused parts in the correct bag for use later.

SSP 01	End Base Rail Pack
SSP 02	Side Base Rail Pack
SSP 03	Corner Base Rail Pack
EBP 04	Door Frame Pack
SSP 05	Inner Hoop Pack
SSP 06	Door Frame Bracket Pack
SSP 07	End Strut Pack
SSP 08	End Hoop Pack
EBP 09	Single End Frame Aluminium Pack
EBP 12	Double End Frame Aluminium Pack
EBP 13	Aluminium Door Frame Pack
EBP 15	Single Door Fittings Pack
EBP 16	Double Door Fittings Pack
EBP 17	Crop Bar Fittings Pack
SSP 18	Side Vent Pack
SSP 19	Side Vent Additional Hoop Pack
EBP20	Single Door Fittings Pack (16ft wide)
EBP21	Double Door Fittings Pack (16ft wide)

Construct your polytunnel in this sequence:

- Foundations
- Side Base Rail
- Hoops
- Ridge
- Corner Stabilisers
- Door Frames
- End Base Rails
- Anti-Hotspot Tape
- Polythene Cover
- Doors



Foundations - Squaring the polytunnel

Parts / Packs	Foundation Tubes
Tools	Tape measure, Tape, Setting out pins / pegs, String



We recommend that the foundations are set out accurately, this will ensure the polytunnel is constructed to satisfaction.

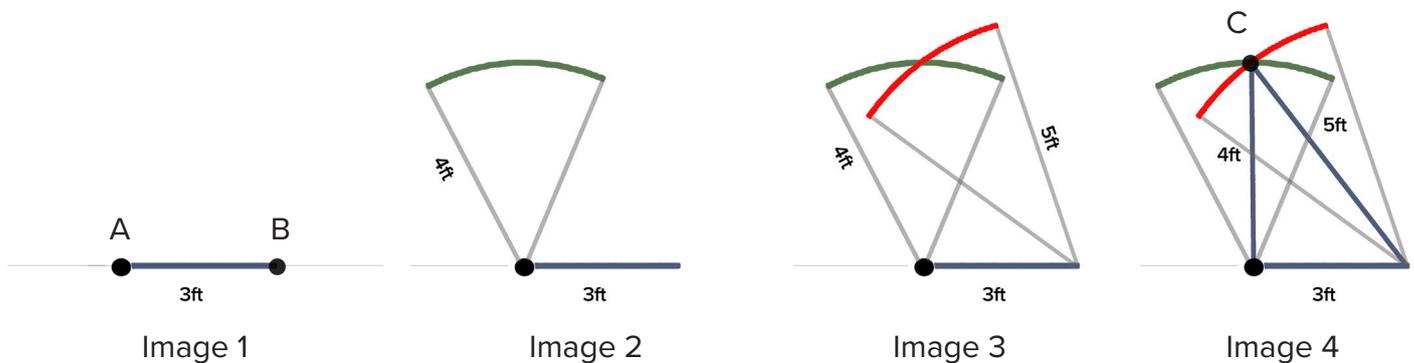
Use the 3:4:5

Triangle Method to position the foundation tubes correctly. This will ensure the ends are square with the sides.

Any measurement can be used, simply multiply the 3,4,5 by the same number.

e.g. – 3ft, by 4ft, by 5ft can easily be multiplied by 5 to become 15ft, 20ft, 25ft, or by 10 to be 30ft, 40ft, 50ft.

For this example, we're going to keep it simple at 3ft, 4ft, 5ft.



Creating your right-angle.

- 1 - Take a foundation tube/screw anchor and install it in the ground where you want your front left-hand corner to be. (facing the front door, the foundation you've just installed will be on the left corner) **(Image 1, A)**
- 2 – Install a second foundation tube in the ground past the length of your 3 measurements (ie, if you're doing a 3ft length, place the foundation tube 5ft away)
- 3 - Take a length of string and tie it between the two foundation tubes so it's taut. **(Image 1)**
- 4 – From the original corner foundation tube, mark 3 ft along towards the second tube. **(Image 1, B)** and place a peg here.
- 5 – From the same original foundation **(A)**, take a second length of string and measure 4ft by making an arc **(Image 2)**
- 6 – From the 3ft marked measurement **(B)** peg, draw an arc 5ft **(Image 3)**
- 7- Where the arcs cross is your exact point for your right angle triangle. **(Image 4)**
- 8- Using the original corner foundation tube, you can now extend your string lines through the exact points **(B&C)** for the rest of the foundation tubes.
- 9 – To double check your measurements, the diagonal measurements across the opposite corners of the polytunnel should be the same on both sides.

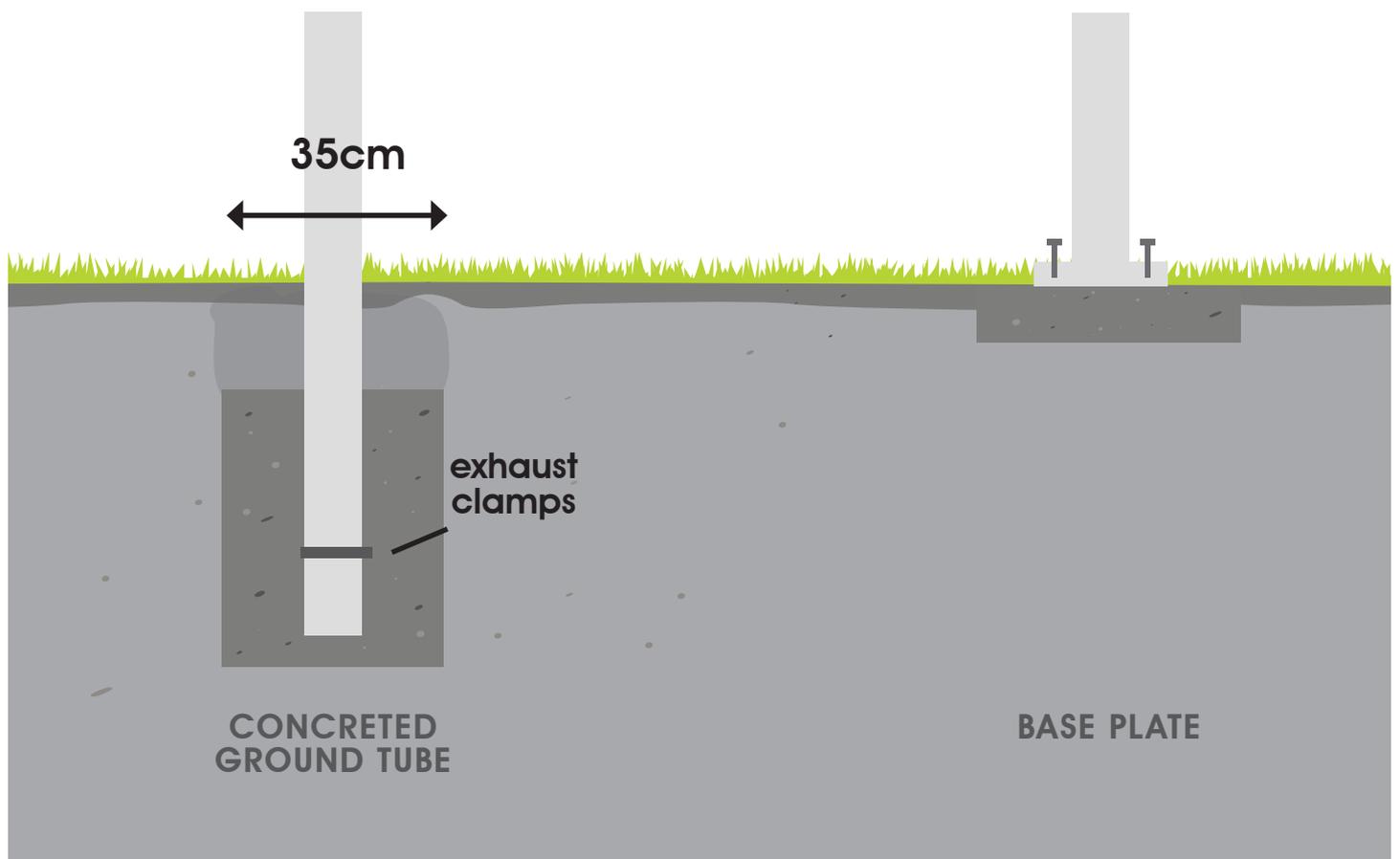
Foundations - Foundation Tubes

Traditional Ground Tubes

Concreting method: For each foundation tube dig a 35cm wide x 45cm deep hole. Fill the hole to the required depth with concrete or quick setting postmix. Position each foundation tube in the concrete leaving 40-45cm above the finished ground level. Ensure the clamp has been securely fastened to the base of the foundation tube. This will prevent the foundation tube from pulling out after the concrete has set. The exact position of the clamp is not crucial so long as it is somewhere in the bottom half of the concrete foundation, the nearer the bottom the better. It may be desirable not to fill the hole completely, but to leave a space at the top to back fill with soil. This will hide the concrete and allow you to cultivate up to the edges of your polytunnel.

Base Plates

Used when fixing your polytunnel to a concrete base (or similar). Position the base plates using the 3:4:5 triangle method as shown on page 4. Mark the position of the holes, then using a 10mm masonry bit drill two 80-100mm deep holes per foundation tube in to the concrete base. Drop the sleeve anchors bolts (supplied) through the base plates and hammer in to the holes. Tighten the nuts with a 13mm spanner or socket until secure.



Base Rail - Sides

Parts / Packs	Corner Base Rail Bracket (SSP03), Side Base Rail Bracket (SSP02), Aluminium Base Rail 6ft
Tools	13mm & 17mm Spanner / Socket



IMAGE 1

Step One

Lay out the base rails and fittings along each side of the polytunnel in the correct order.

Place a Corner Base Rail Bracket (**SSP03**) by each end hoop, and a Side Base Rail Bracket (**SSP02**) by each inner hoop (**Image 1**).

Slide the relevant base rail brackets onto the foundation tubes.

Next, bolt the base rails onto the base rail brackets using the nuts, bolts and washers provided in **SSP02** and **SSP03**. The base rails should meet approximately in the center of each hoop (**Images 2 & 3**).

Your base rail should be on the outside of the polytunnel and as close to the ground as possible, even if this means it's not level. This will prevent draughts. Alternatively, you can maintain a straight and level base rail and fill any gaps beneath it with earth etc. Once in position tighten the bolt on the ring fitting.

Note:

You won't attach the base rail across the ends of your polytunnel until you've secured your door frames later in the construction process.



IMAGE 2

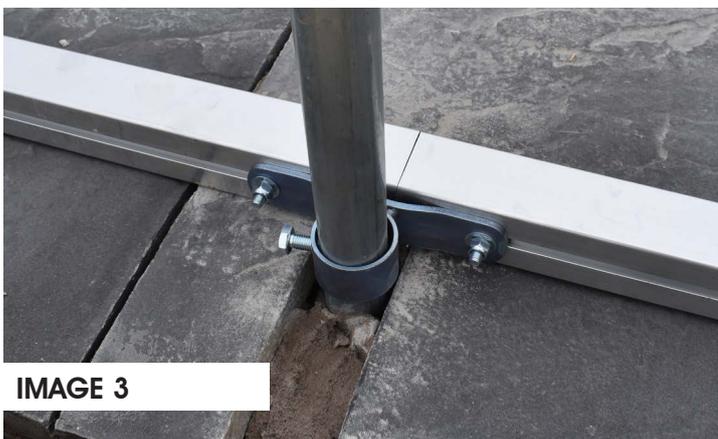


IMAGE 3



IMAGE 4

Fittings

Parts / Packs	Inner hoop pack (SSP05), End hoop pack (SSP08), Door frame bracket pack (SSP06), End strut pack (SSP07)
Tools	17mm Spanner / Socket



IMAGE 1

Image 1 - These fittings will be used later in the construction process, but it's important that you place them on the relevant foundation tubes now, and in the correct order. Ensure all bolts are on the inside of the tunnel.

First Intermediate Foundation Tubes

From the end strut pack (SSP07), Place a 45mm (50mm outside diameter) brace bar bracket on the second foundation tubes in from the front and back (Image 2), there is 4 in total.

These will take the corner diagonal bracing later.

All Foundation Tubes

From the inner hoop pack (SSP05) and the end hoop pack (SSP08), Place a hoop tensing collar on each of the foundation tubes (Image 2).

Corner Foundation Tubes

From the end strut packs (SSP07), Place a 50mm (60mm outside diameter) brace bar bracket on to each of the corner foundation tubes. These will simply rest on the hoop collars.

Finally, from the door frame bracket pack (SSP06) place the door frame brackets (Image 3) on to each of the corner foundation tubes. These will loosely sit on the brace bar brackets with the plate on the inside of the tunnel.

Now lift the hoop tensing collars on the corner foundation tubes (end hoop only) 10cm up and fix in place. This is part of the cover tensioning method (Image 4). The intermediate hoops will be raised later once the cover is secured. Note the end hoops can't be raised once the door frames are in place, so raising them now will ensure the polytunnel has a straight ridge after the polythene has been tensioned at the end.



IMAGE 2



IMAGE 3



IMAGE 4

Note:

At this stage you will only need the fittings from the packs, keep any unused bolts, nuts etc. in the pack and in a safe place.

Hoops and Ridge

Parts / Packs	End Hoop Pack (SSP08), Inner Hoop Pack (SSP05), Hoops, Ridge
Tools	17mm Spanner / Socket, Tek bit, Drill



IMAGE 1

Note: If adding additional ridges refer to page 14 before you continue.

Step One (Image 1)

Our hoops are supplied in two pieces, one half having a swaged end with the other being plain. This allows the two halves to slot together. Before doing this place the Hoop to Ridge Bracket on the plain half of the hoop approx. 2cm from the join. Hand tighten to hold in position with the bottom ring hanging downwards.

Hoop to Ridge Bracket

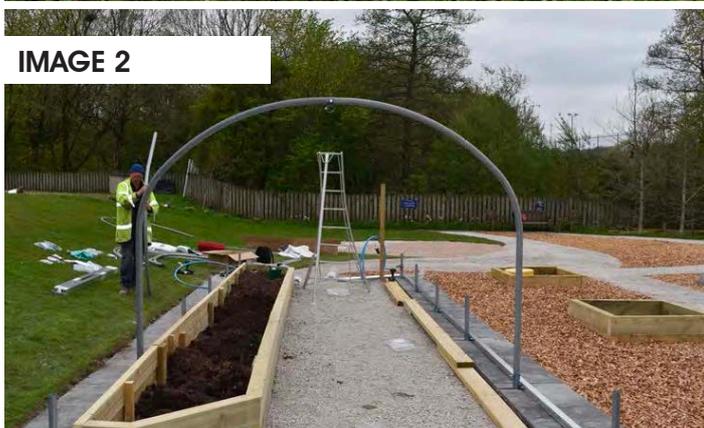


IMAGE 2

Step Two (Image 2)

Now slot the two halves together and lift up each of the hoops and sleeve them over the foundation tubes. This is easier to achieve with two people. Once the hoops are in position on the foundation tubes, the hoop to ridge brackets should be positioned top center and hand tightened. Make sure that the bolt head faces inwards on the end hoops otherwise they may damage the polythene cover later.



IMAGE 3

Step Three (Image 3)

Once all the hoops are in position, the ridge tube sections can be slotted in to place. Start at one end with a double plain ended section, followed with the swaged sections. Slot these together through the hoop to ridge brackets. You may need to temporarily slacken the hand-tightened bolts of the hoop to ridge brackets to align the ridge sections. Make sure the ridge is positioned on the under-side of the hoops, as this prevents the ridge tube rubbing against the polythene after installation. Do not cut off any excess ridge until the framework has been leveled with the corner bracing.



IMAGE 4

Step Four

Now position and tighten the top collars on the hoop to ridge brackets effectively locking the hoops to the ridge. The plain half of the hoop will squash against the swaged end of the other half of the hoop preventing them from pulling apart. Make sure the ridge tube is flush with the collar on one end hoop and insert the plastic ridge plugs (Image 4).



Corner Diagonals

Parts / Packs	End strut pack (SSP07)
Tools	17mm Spanner / Socket, Spirit Level



IMAGE 1

Note: There are four corner diagonal struts, one for each corner. One end fastens half way up the end hoop, with the opposite end fastening to the bottom of the next hoop in (attaching to the brace bar bracket).

Step One (Image 1)

Before attaching the corner diagonal roughly position the door frame brackets so that they are close to hand when fitting the door frames.

Step Two (Image 2)

Connect the corner diagonal strut to the brace bar bracket on the second hoop in using the nuts and bolts provided in SSP07.



IMAGE 2

Step Three (Image 3)

Raise the opposite end of the diagonal strut to a point where it just meets the end hoop. This will be at a 45 degree angle (approx.). Slide the brace bar bracket (that you positioned on page 7 ref: SSP07) up the end hoop to a position where it meets the diagonal strut. Using the same bolt and nut provided, attach the strut to the brace bar bracket, making sure the bolt head is on the outside. This will prevent the threaded end of the bolt sticking outwards and damaging the cover.



IMAGE 3

Repeat this on all four corners, but don't tighten the nuts just yet.

Step Four (Image 4)

Using a spirit level ensure the end hoop is vertical, and then tighten the nuts. Repeat this with each diagonal strut.

Step Five

Check the intermediate hoops are vertical, if out of line adjust the hoop to ridge bracket on the ridge and re-tighten.



IMAGE 4

Door Frames

Parts / Packs	Door Frame (EBP09 or EBP12 or EBP20 or EBP21), EBP04, SSP01
Tools	13mm Spanner, String, Spade and Spirit Level



Step One (Image 1)

Lay the three aluminium box sections on the floor in a 'H' formation, with the outside face facing down. The shorter piece (door frame lintel) should be positioned approx. 30cm in from the end.

TOP OF DOOR FRAME:

Slide four bolts into the rear grooves of the short section (two at each end), and two further bolts in to the top of each of the longer sections.

Place the door frame joiners in position and hand tighten the nuts. Do this for both brackets.

BOTTOM OF DOOR FRAME: Slide three bolts up from the bottom of each door upright.

Use the lowest bolt in each upright to fix the door frame stabiliser bar. This wants to be positioned approx. 45cm up from the bottom. Again, don't over tighten the nuts at this stage as they will be repositioned later.

Use the remaining bolts to attach the end base rail bracket, these are the same as the door frame joiners.

Step Two

Tie a string line between the two end hoops at ground level (**Image 3**). Using the string line across the hoop you can ensure your door posts and base rails will be in-line.

Step Three

Take your constructed door frame to the polytunnel and position in the centre of the hoop using the string line as a guide. Mark out where you need to dig (**Image 3**).

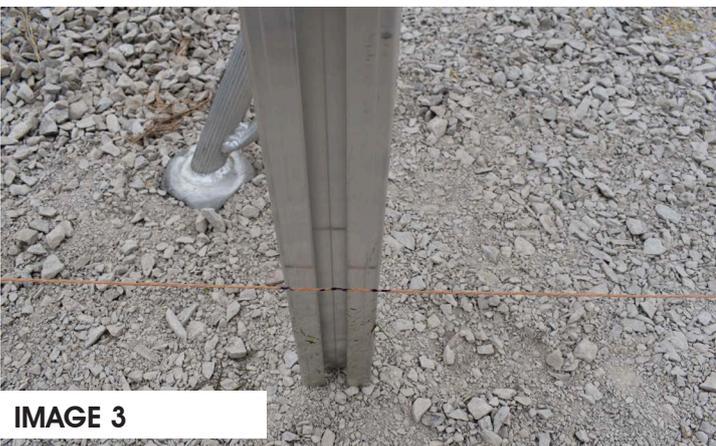




IMAGE 4



Step Four

Dig a hole approx. 30cm x 30cm square to a depth to suit the length of your door post (**Image 4**).

Step Five

Slide a bolt down from the top of each door post, then slide the door frame bracket in to position and fasten hand tight with the M8 nylock nuts provided (**Image 5**).

Using a spirit level ensure the door frame is vertical and double check measurement at the base, then tighten the top nuts. Secure the door frame in the ground using post crete.



IMAGE 5

Step Six

To position the door lintel to the correct height (approx. 2mtr from ground level to the top of the door lintel), loosen the nuts and raise or lower to the desired height and re-tighten the nuts. Make sure the height is not higher than the finished height of the door or PVC ventilation panel.

Step Seven

Reposition the door frame stabiliser bar at ground level (or just below) and tighten the nuts (**Image 6**). You may wish to press the stabiliser bar slightly in to the ground or burying it to prevent tripping over it. Your door frame is now complete.



IMAGE 6

NOTE: If you've chosen the base plate option for your foundations you will need to cut down the aluminium door posts to suit the finished level of your concrete base. This will give you the opportunity to cut them to the exact height you require. A hacksaw will be sufficient to carry out this task. Four 'L' shaped brackets are supplied (one for each post) to secure the posts to your concrete base.

Sleeve anchors are provided to bolt the brackets to the concrete, and M8 bolts with nuts to attach the brackets to the door posts (using the 'T' slot on the inside of the posts). The door frame stabiliser bar (step 7) is temporarily positioned above the 'L' shaped brackets (approx. 10cm above ground level) whilst the brackets are fixed to the concrete, then the bars are removed altogether. They are no longer required as they serve no purpose once the posts are fixed to your concrete base.



IMAGE 7

End Base Rails

Parts / Packs	End Base Rail Pack (SSP01)
Tools	13mm Spanner



Step One

Measure the distance from the outside of the door post to the inside of the hoop and cut the gable end base rails to length.

Step Three (Image 1 & 2)

Attach the base rail to the bottom of the door frame. Fit the other side of the base rail to the corner base rail bracket. The base rail should sit at ground level if the tunnel is erected on a level site. You may need to lower the door frame stabilizer bar to achieve this.

Repeat this process for both ends of your polytunnel.

IMAGE 1



IMAGE 2

Optional Extras - Brace Bars (Crop Bars)

Parts / Packs	Crop Bars (CBF), Crop Bar Hangers (CBH on 4m wide tunnels)
Tools	17mm Spanner / Socket, spirit level



IMAGE 1

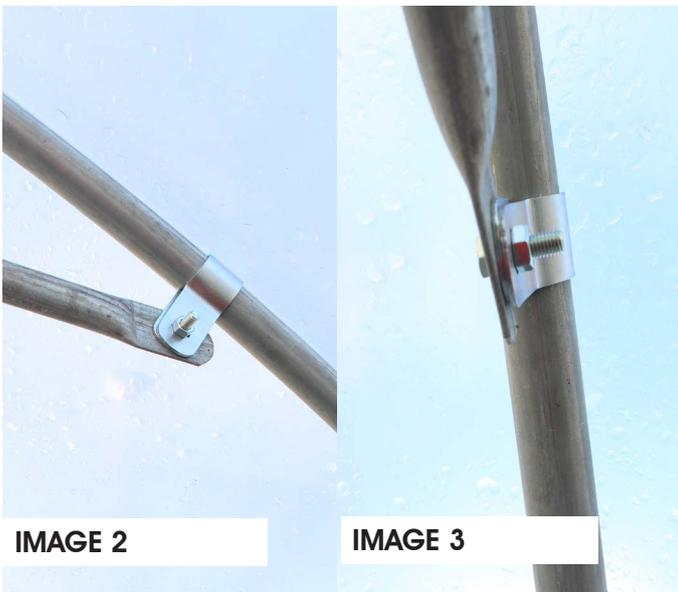


IMAGE 2

IMAGE 3



IMAGE 4

Fitting Brace Bars (Widthways Crop Bars)

Each horizontal bar comes with two keyhole clamps and two nuts & bolts. The clamps are simply prised open and clipped over the inner hoops (NOT the end hoops). Once on, squeeze the clamp back together as much as possible. Then pass the bolt through both sides of the clamp and continue through the hole in the flattened end of the crop bar.

Now attach the nut, but don't over tighten as the final position has yet to be decided. Don't sandwich the flattened end of the crop bar between the two sides of the clamp, attach it to either side of the clamp, this will give the clamp a tighter grip.

Repeat this process on the other side of the hoop. Once the crop bar is attached at both ends you can decide on the final position, you may want to use a spirit level for this, then tighten both nuts & bolts. Do the same on all the inner hoops.

Brace bars aren't required for the end hoops as the aluminium end frames serve the same purpose.

For 3m wide polytunnels the crop bar assembly is now complete (**Image 1**). For the larger 4m wide polytunnels we supply additional brace bar hangers for extra support (**see Image 4**). To attach these, the process is similar to horizontal bars. Position two keyhole clamps on to each of the inner hoops, one at each side of the central ridge tube (**Image 4**). Using the nuts and bolts provided attach the hangers in the same way as you did the brace bars. Don't fully tighten and leave these hanging down for the moment.

Attach two more keyhole clamps to the horizontal brace bar and position these where the hangers meet. Attach the hangers using the nuts and bolts supplied, and once you're happy with the position you can tighten all the nuts and bolts.

I Didn't Order Brace Bars...

You would normally install the brace bars when you've assembled the main framework, before the anti-hot spot tape and cover is fitted. However, our brace bars can be fitted retrospectively if you decide to add them at a later date. You may need to attach the clamps at the bottom of the hoop where there is a gap between polythene and the hoop, then slide them up. It is advisable to lower the hoops on the foundation tube when doing this, and if possible apply a small piece of anti-hot spot tape over the clamps where they make contact with the polythene.

Optional Extras - Additional Ridge Tubes



Fitting Additional Ridge Tubes

These are installed in the same way as the central ridge tube, and at the same time. Ensure you position all the 'hoop to ridge' collars on the hoops before you slot the two halves of the hoops together. As with the central ridge ensure you face the bolts inwards on the end hoops to prevent the bolts heads damaging the polythene. You can position the additional ridge tubes wherever is the most convenient for you to support your climbing plants.

I didn't Order Extra Ridges...

If you haven't purchased additional ridge tubes with your polytunnel and decide you want to fit some after it's constructed, we can supply special retrospective 'cross-over' clamps that will enable you to do so (phone for details).

Anti-Hotspot Tape

You will have been supplied with two widths of hot spot tape, 30mm and 60mm. The 30mm is used on the inner hoops and the 60mm is used on the end hoops. The wider tape is used on the end hoops as the polythene cover will have greater contact with the end hoops due to the polythene being pulled around the ends. The 60mm tape should be positioned accordingly, half on the top side of the hoops and half on the outside face of the hoop.

Apply the anti-hotspot tape over the whole hoop and down the length of the ridge, so that any part of the framework where the polythene comes into contact with it has the foam barrier tape between them. This prevents heat build-up in the steel work being transferred to the polythene cover, and also reduces the likelihood the hoops rubbing against the polythene.



Use the leftover hotspot tape to cover any fittings, bolts and sharp edges that may damage the polythene.



Optional Extras - Side Vent

Parts / Packs	Side Vent Pack (SSP18), Side Vent Additional Hoop Pack (SSP19)
Tools	13mm Spanner

Step 1: Once your polytunnel framework has been constructed you should attach the aluminium side rail. This is normally positioned approx. 80-100cm above ground level, below the point where the hoops start to curve. The side rail is attached to each of the intermediate (inner) hoops using the brackets provided (see **Image 3**). The side rail is attached to the two end hoops using 50mm keyhole clamps (see **Image 2**).

Start by fitting the first side rail section onto the end joiner (75mm long) and bolting onto the keyhole clamp on the first hoop (**Image 1 & 2**).

Next, slide the following side rail sections onto the intermediate joiners (150mm long) and bolt to the hoops with the bracket and bolts provided (**Image 3**). Work your way down the length of the tunnel until the side rail is complete.

Set the keyhole clamps to the required height and tighten these in place. The intermediate brackets can be left slightly loose as these will need leveling once the hoops have been raised.



IMAGE 1



IMAGE 2



IMAGE 3

Step 2: Cut a length of netting to fit between the base and side rail, leave extra material for adjustment and fitting. Each net panel is attached centrally between each of the hoops. Each of the net panels will have two parallel straight edges and two rough (cut) edges. The rough edges are the top and bottom with the neat straight edges being the sides. This will ensure a neat finish when fully fixed in to position (**image 4**).

We recommend taping the net to the side rail so that the net is already in position before the cover is fitted (**Image 4**). Alternatively you can leave the net on the ground and pull the net over the side rail once the tunnel has been covered.

You can now install the main polythene cover on your polytunnel. Follow the main polytunnel cover instructions for this (only secure to the base rail at this stage) and tension the cover accordingly.

Whilst attaching the main cover to the base rail you should also attach the bottom edge of each of the net panels to the base rail (**image 5**)

Simply sandwich the net between the polythene and the base rail when clipping the polythene in to place.



IMAGE 4



IMAGE 5

Optional Extras - Side Vent



IMAGE 6

Step 3: Now you cut the ventilation holes in the polytunnel cover in the space between the side rail and the base rail. These should be circular holes approx. 50cm in diameter, and positioned centrally between each of the hoops. The top of the hole should be approx. 10cm below the side rail with the bottom of the hole being no less than 25cm above ground level (**Image 6**).

On 3.7m (12ft) wide and 4.3m (14ft) wide polytunnels you may find the bottom of the hole is higher than 25cm off the ground, especially if the side rail is positioned a little higher.

If this is the case you can make the ventilation hole a little larger if you want the extra ventilation.

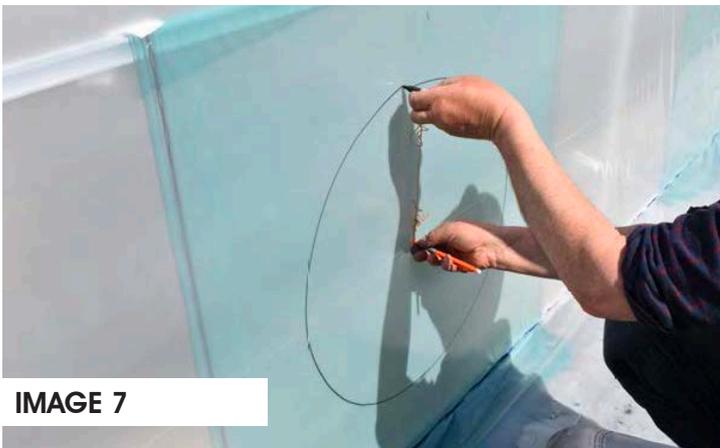


IMAGE 7

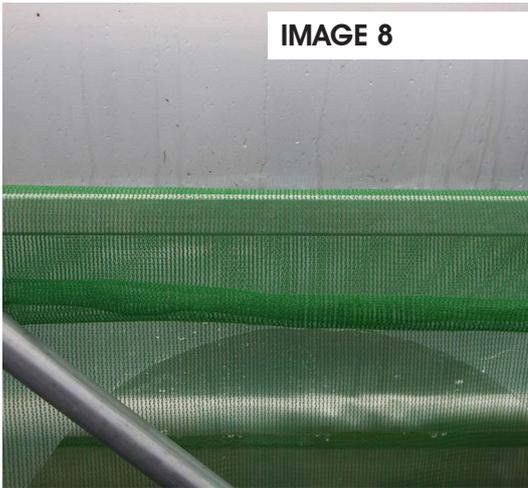
To do this you can make a circular cardboard template 50cm in diameter, place it in the desired position against the polythene and cut around it with a sharp knife. Alternatively you can draw a circle on the polythene using a marker pen (or similar) tied to a 25cm length of string, creating a type of compass (**Image 7**). Then simply cut out the circle of polythene.

Make sure you don't leave any slits around the edge of the circles as they may tear over time.

Repeat this process in between each of the hoops.



IMAGE 8



Step 4: Pull the net panels up behind the side rail (If not done already) between the side rail and the polythene, allowing the surplus material to drape over the side rail and hang down on the inside (**Image 8**). When pulled taught, the net panels should hold themselves in position.

Step 5: Roll out the side screen polythene along the outside of the polytunnel and trim the length to match the length of the polytunnel. Don't worry if you cut it a few centimetres short.

Slot together the lengths of tube and attach the handle, then using the self-drilling screw provided, drill through both tubes on the sleeved joints of the handle and drive tubes.

Lay the tube assembly on the polythene along the lower edge and wrap the polythene around it once. Clip the plastic clamps on to the tube to secure the polythene in place. These should be positioned evenly allowing two clips for each space between each of the hoops. Hold the upper edge of the polythene screen against the side rail so that the tube is sitting horizontal on the ground in line with base rail.

An extra pair of hands may be useful at this stage. The side screen polythene should then be clipped in to the side rail using the Wiggle-Wire (**Image 9**). This will trap all three materials (at the same time) - the polythene screen, the main polythene cover and the net panels. The side screen should now be in position.

IMAGE 9



You should wind it up and down several times to making sure you're happy with its operation and make sure it goes up and down evenly and level. The Wiggle-Wire can un-clipped and re-attached if you need to reposition the polythene screen. Once you are happy with the side vent screen you can trim off any excess net on the inside and trim off the excess polythene on the outside to leave a neat finish.

IMAGE 10



Step 6: To prevent the screen blowing around in the wind you need to attach the nylon webbing. These are normally positioned as close to each of the hoops as possible, including the first and last hoops. Simply attach the Wiggle-Wire spring hooks in place on the base rail and side rail and attach the strips of webbing. Tie one end of the webbing to one of the hooks on the top clip and run the webbing down and through both hooks on the bottom clip, and back up to the second hook on the top clip. Pull tight and tie off (**Image 10**). Repeat this process on all the clips. Finally, any left-over anti-hot spot tape can be applied to the lower part of the first hoop, over the main polythene cover, to give a little extra protection to the cover from any abrasion from the handle (**Image 11**). Your side vent screen is now completed.

IMAGE 11



NOTE:

The handle on the tube slides in and out. You need to slide it out to free the handle in order to operate the screen, and push it back in afterwards so that it holds against the hoop to prevent the screen inadvertently rolling down. Your screen can be partially or fully opened giving you the level of ventilation you require.

Polytunnel Cover

Parts / Packs	Polytunnel Cover, W Wire
Tools	Stanley Knife, Wire Cutters, Eye Protection

Fitting The Polythene Cover

NOTE: Don't attempt to cover the polytunnel if windy. However, if there is a slight breeze then use this to your advantage and pull the cover over the tunnel in to the wind.

Step One

Unroll the polythene sheet along one side of your polytunnel (preferable on the downwind side if there is a slight breeze). If you have good weather, leave the cover unrolled on the ground to warm up in the sun, this will make the cover a little softer and easier to work with.

Pull the polythene cover over the polytunnel frame (**Image 1**), allowing it to unfold as you do. Make sure there are equal amounts of polythene, both to the ends and to the sides. Because our polythene has an anti-condensation additive on the underside it is important to fit your cover the correct way up. If you stand inside the polytunnel you will see the words “**THIS SIDE INSIDE**” printed on the polythene (**Image 2**). If you can read this then you've installed it correctly, if not, remove and replace.



Step Two

Secure the cover at one end by pushing the polythene in to the groove ('C' channel) of the door lintel, then use the 'W' wire to secure it in to place (**Image 3**). The 'W' wire is quite 'whippy' so we recommend that eye protection is worn.

Step Three

Fasten the polythene in to the door lintel at the other end, pulling the polythene as tightly as possible (**Image 4**).





IMAGE 5

Step Four

You can now start securing the polythene to the side base rails using the 'W' wire, working from the middle outwards (**Image 7**). Don't pull the cover too tight. If you can see a seam in the polythene use it as a ruler, and keep the seam straight.

Now fix the polythene to the other side, again starting from the centre and working outwards, but this time pulling the cover tight.

Step Five

Using a sharp knife, cut the spare polythene from the corner outwards at a 135° angle to the base rails (approx.). This will allow the cover to be folded around the end of the polytunnel (**Image 6**).

Now you can attach the polythene to the end base rails across to the door post. Make sure you pull the polythene both downwards and in the direction of the door frame whilst attaching the 'W' wire.

Once both sides are complete you can work your way down each of the door posts, starting from the top. Take note of the direction which you're pulling the polythene, as you move. At the top of the doorframe you will mostly be pulling the polythene downwards, but as you progress down the doorframe you will gradually change direction and begin to pull the polythene mostly across. You will need to pleat the polythene in order to trap it all.

Try and make sure the pleats are facing downwards as not to hold rain water. This will reduce the build-up of green algae in the pleats. If not happy with the results you can release the 'W' wire and redo accordingly. Once two thirds down the doorframe you will be pulling across only (**Image 7**).

Step Six

Once you're happy with the finished look, apply a second length of 'W' wire around the entire tunnel. This will give extra hold to the polythene. Try and stagger the 'W' wire with the first length to give extra grip on the polythene. (**Image 8**) Once this has been completed you can trim off the excess polythene, both around the door frames and along the sides with a sharp knife or pair of scissors. Take care not to cut the main cover.

Step Seven

Tensioning The Cover :

From the inside of the tunnel, lift each hoop upwards, one side at a time. Slide the locking collar up to the bottom of the hoop and tighten the bolt (**Image 10**). Repeat this on every inner foundation tube. This unique polythene tensioning system allows the cover to be tensioned drum-skin tight. (**Image 9**)



IMAGE 6



IMAGE 7



IMAGE 8



IMAGE 9

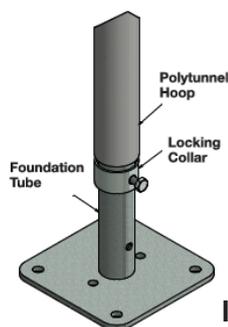
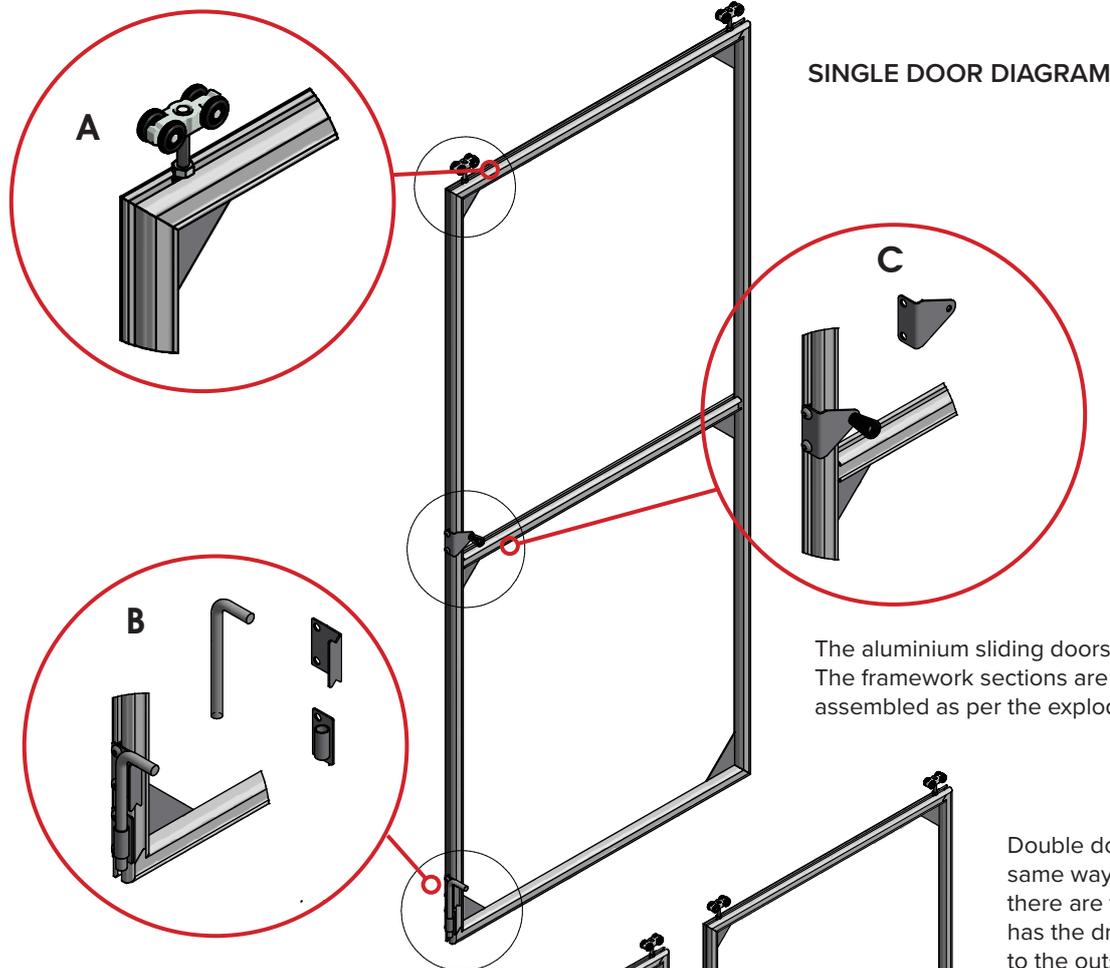


IMAGE 10

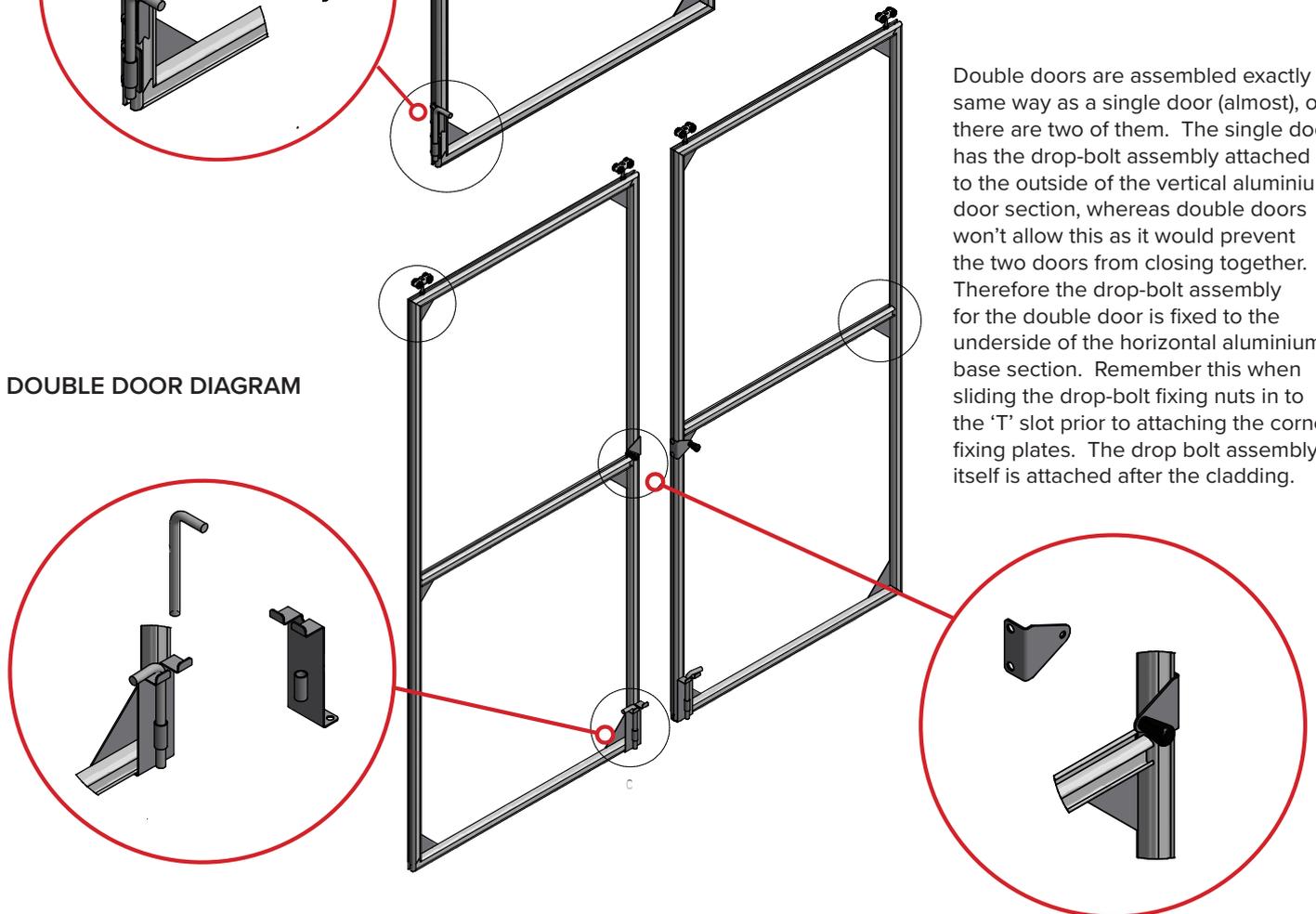
Doors - Aluminium Sliding Door Construction

Parts / Packs	Single Door Fittings Pack (EBP15), Aluminium Door Frame Pack (EBP13), Double Door Fittings Pack (EBP16) - Only required for double doors
Tools	13mm Spanner, 4mm Allen Key, wire cutters



The aluminium sliding doors come ready to assemble. The framework sections are cut to size and should be assembled as per the exploded diagram.

DOUBLE DOOR DIAGRAM



Double doors are assembled exactly the same way as a single door (almost), only there are two of them. The single door has the drop-bolt assembly attached to the outside of the vertical aluminium door section, whereas double doors won't allow this as it would prevent the two doors from closing together. Therefore the drop-bolt assembly for the double door is fixed to the underside of the horizontal aluminium base section. Remember this when sliding the drop-bolt fixing nuts in to the 'T' slot prior to attaching the corner fixing plates. The drop bolt assembly itself is attached after the cladding.

Doors - Aluminium Sliding Door Construction

Step 1

Insert the brush strips in to the narrow slit on the inside of the aluminium door frame sections (**Image 1**). There should be brush strips for the top and both sides. Now lay out the aluminium door frame sections on the floor with the brush strips facing upwards.

Take the two long M8 bolts and spin an M8 nut three quarters of the way along each of the threaded shafts, these will act as 'locking nuts' later. Now screw these bolts in to the two door runners (trolleys) until the threaded ends are flush on the exit side. The trolley bolt heads can now be slid approx. 8cm in from each end along the 'T' slot on the outer edge of the top cross bar, and the locking nuts screwed firmly down to hold the trolleys in place (**Image 2**).

Now layout the aluminium door frame sections on the floor with the brush strips facing upwards and position the correct fittings by each joint.

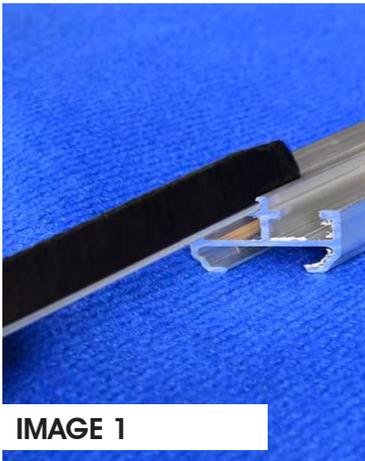


IMAGE 1

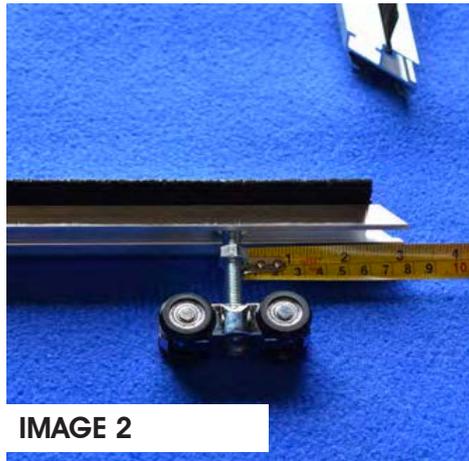


IMAGE 2

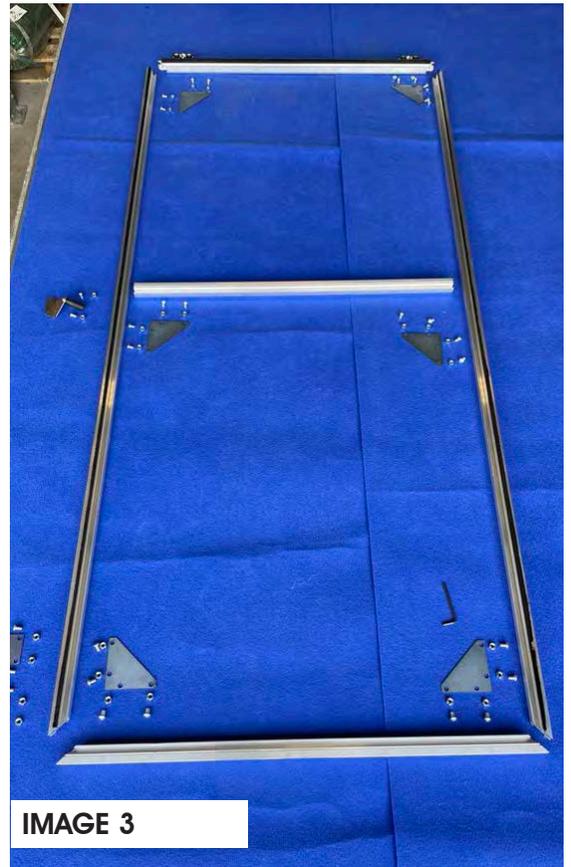


IMAGE 3

Step 2

Decide which way you want the door to slide open and place the door handle and drop bolt brackets on the opposite side. For example if your door slides to the left your handle will be on the right hand side as you look at the front of the door, the door in image 3 opens to the left.

Slide the nuts for the corner plates into the inside 'T' slots (**Image 4**) and the nuts for the door handle and drop bolt brackets into the outer 'T' slot (**Image 5**).

For a double door the drop bolt bracket is fixed to the underside of the door so you will need to slide 2 nuts into the outer 'T' slot of the lower horizontal frame piece...

Continues on next page



IMAGE 4



IMAGE 5

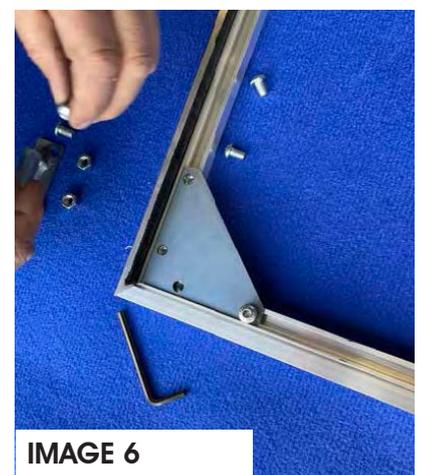


IMAGE 6

Doors - Aluminium Sliding Door Construction

Line the nuts up with the brackets and bolt all the corner plates to the frame using the button head screws provided (**Image 6 on previous page**). Jiggling the door sections together on the corner plates will naturally make the door square. Once all the bolts are tightened your door is ready to be clad with polythene.

Don't attach the door handle and drop bolt fittings just yet, as this is done after cladding.

Step 3

Once the frame has been assembled place the door polythene over the door with the outside of the door facing upwards.

Secure the polythene to one end of the door using the 'W' wire (**Image 7**). Start at one side and work across. It doesn't matter if you attached the polythene to the top or bottom of the door.

Once attached, you can then fix the polythene to the opposite end of the door pulling the polythene tight whilst doing so.

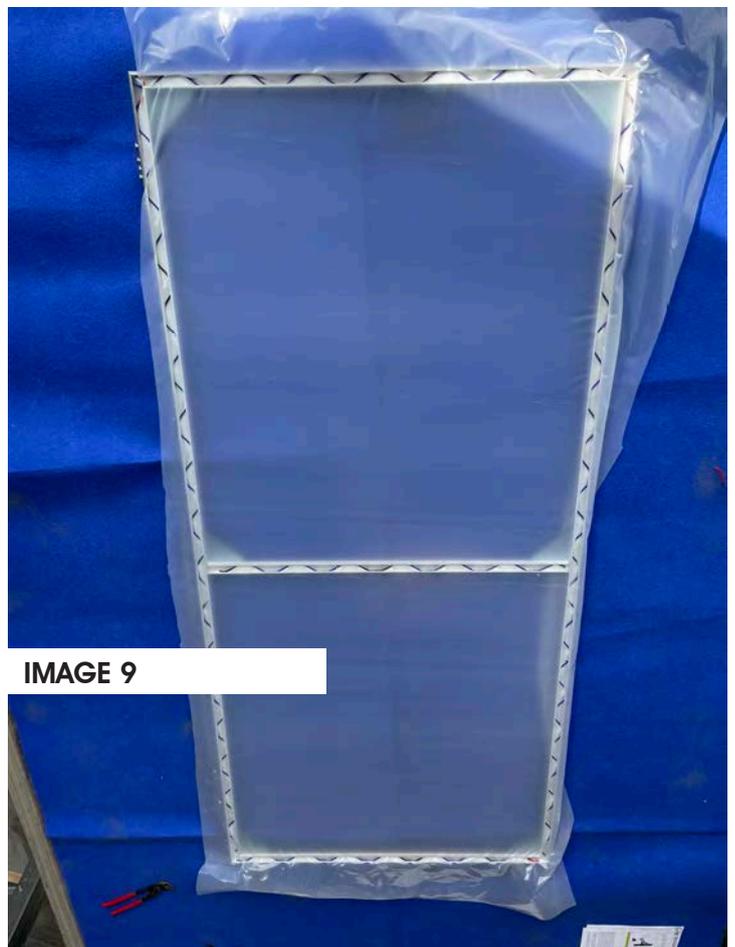
Attach the polythene to the sides of the door, switching from one side to the other to ensure the polythene is fitted evenly. Pull the polythene tight as you go (**Image 8**).

Attach the polythene to the central aluminium section, starting at one side and working across. This will give the polythene a little extra tension (**Image 9**).

If you're netting the top half of the door you will have only attached the polythene to the bottom half of the door at this stage. You would repeat the same process using netting on the top half of the door using a second length of 'W' wire to clip the netting in to the mid rail.

The aluminium 'C' rail which the doors and base rails are manufactured from will accommodate up to three consecutive runs of 'W' wire, so doubling up is not a problem. By attaching the netting after the polythene you will be able to unclip the net (without having to unclip the polythene) and replace it with a piece of polythene at a later time if required.

Continues on next page



Doors - Aluminium Sliding Door Construction

Step 4

Once your happy with the finish, double up on all the wiggle-wire to give extra hold on the polythene, try to stagger the wiggle wire from the first piece (**Image 10**).

Once the door is complete, trim off any excess polythene and attached the drop bolt fixtures and door handle.



Image 10

This process is repeated for double sliding doors. The double door pack however includes two steel tubes.

These can be driven or concreted in to the ground where the two doors meet in the centre of the door opening. These allow the drop-bolt fasteners to drop in them in order to secure the doors when in the closed position.

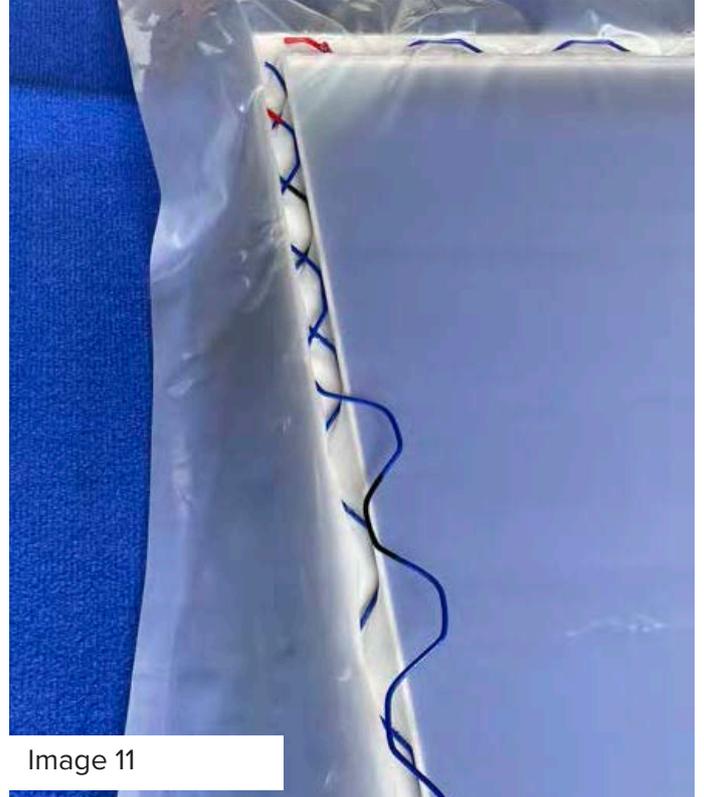


Image 11

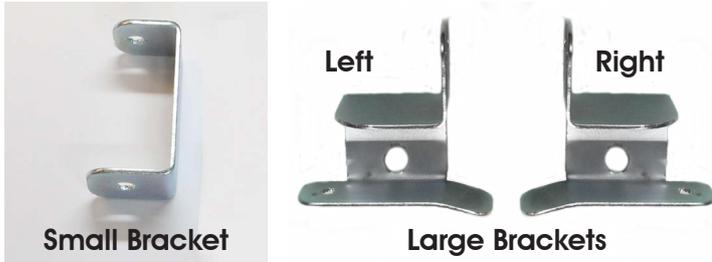
Doors - Aluminium Sliding Door Installation



IMAGE 1

Step 1 - Attaching the door guides

Attach the small bracket and one of the large door guide brackets to the door guide rail (**Image 1**).



NOTE: The small bracket will attach to the right hand side of the door guide rail for doors that will slide open to the right, and vice versa if sliding to the left.

One of the larger brackets will attach to the opposite end of the guide rail, which is later fixed to the door post.

NOTE: The larger brackets are handed (one is right hand the other left hand), so depending which way the door slides the appropriate bracket will be required. Even though it makes little difference which one is attached to the door guide rail, it does make the door operation easier if the door closes in to the correct bracket on the facing door post, as the wider opening will assist the door in to the closed position.



IMAGE 2

Once the brackets are attached to the door guide rail it can be attached to the polytunnel frame. The small bracket hooks under the base rail and is tek screwed in position to the inside of the base rail (**Image 2**).

The larger bracket is Tek screwed to the door post. Use Tek screw bit provided (as below)

On the adjacent door post the other large bracket is fitted (**Image 4**). If required, the heights of the brackets can be slightly adjusted after the door has been hung.



Tek Screw Bit



IMAGE 3

Doors - Aluminium Sliding Door Installation



IMAGES 1

Step 5: Hanging The Door

Slide the door track through the door rollers so that the door is attached to the door track.

Position against the door opening of the polytunnel with the door in the closed position. Place an object approximately 10mm thick under the door to create clearance between the underside of the door and the door track (**Images 1**). Once you're happy with the height of the door and the door clearance at ground level you can fix the door tracking (with the door still in situ) to the door frame at one side (**Image 2**). Only use one Tek screw for now.

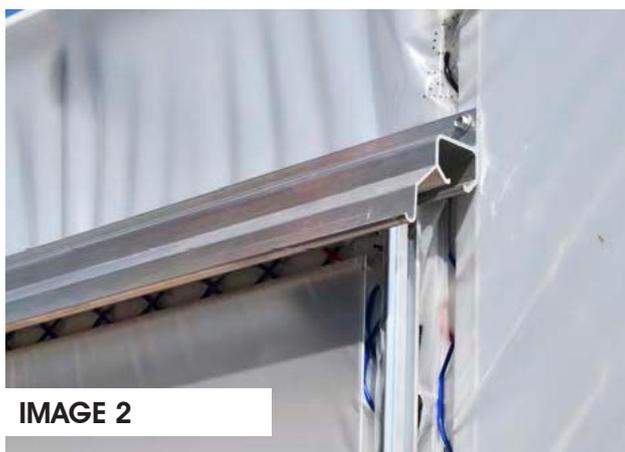


IMAGE 2

Using a spirit level make sure the door tracking is level and then attach it to the other door post, again, only use one Tek screw for now.

The door tracking should be flush with the outside edge of one door post (**as seen in image 2**) with the rest of the track protruding beyond the opposite door post by a full door width. Once you're happy with the door's movement and the clearance with the door guide rail you can double up the Tek screws (both sides) on the door tracking (**Image 3**). This will give it extra support. Further slight adjustments can be made by adjusting the distance the door rollers are threaded on to the door top.

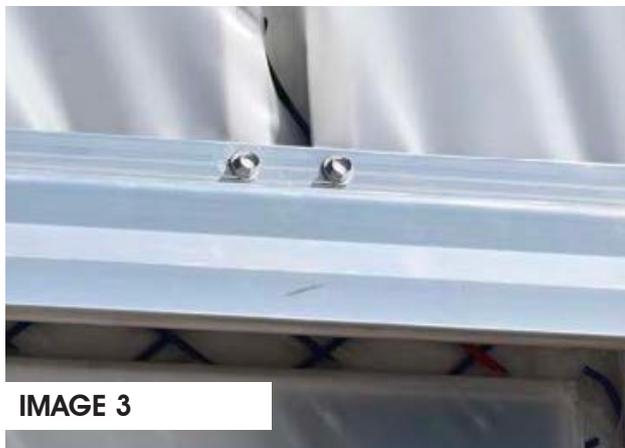


IMAGE 3

Finally, drill two more Tek screws in to the door tracking, one at each end to act as door stops to prevent the door running off the ends of the tracking. The exact distance in from the ends will depend on the position of the door track but will be approx. 6cm in from the ends (**image 4**).

Double sliding doors

The principle is the same, only the door tracking is positioned centrally above the door opening, with an equal amount of tracking protruding at each side of the door posts. Ensuring both doors slide evenly and smoothly along each door guide rail is a little trickier if the ground is not level. You may be required to make some adjustments to the door tracking and the door guide rail to ensure smooth operation and to make sure the guide rail holds the door in place when the doors are open.

Sometimes you have to accept that the doors cannot be exactly level in order to achieve smooth operation. If the doors don't shut tight when closed, leaving a small gap at the top or bottom, then you will need to adjust the rollers by screwing or unscrewing them until the doors close together perfectly. Two steel tubes are provided for the drop bolts to drop in to when closed. These can either be simply knocked in to the ground, or where required they can be concreted in position with a small amount of concrete, and left flush with the ground level.



IMAGE 4

Doors - PVC Panel

Parts / Packs	PVC Panel, Wiggle Wire
Tools	Wire Cutters, Stanley Knife



IMAGE 1

If you're only fitting one access door and have chosen a ventilation panel for the opposite end, then clip this in to position along the top edge first using the 'W' wire (**Image 1**). You can redo this if you're not totally happy with the position, making sure you've got the length correct.

NOTE: Make sure you don't leave a gap at the bottom to prevent drafts, also make sure it's facing the correct way so that the vent is opened from the inside.



IMAGE 2

Then using the same method fasten both sides (**Images 2 & 3**), working top to bottom, alternating from one side to the other to keep the panel central. Finally trim the edges (if required) using a sharp knife.

Remember, once trimmed off it is difficult to undo and fasten down again. If the end of the polytunnel with the PVC panel is out of site it may be worth leaving the excess material un-trimmed. This will enable you un-clip the sides of whole panel allowing periodical rear access, and then reattach it when required.



IMAGE 3

Finally, cut off any excess 'W' Wire using wire cutters (or similar).

Double Zip Door

The double PVC zip door is fitted in the same way. Once fitted, secure the centre of the door using a ground peg through the eyelet in the bottom of the door

Now you've built your polytunnel, share your photos.

The best photos each month will be shown via our media channels below.

sales@npstructures.co.uk
f @northernpolytunnelsuk
t @NPolytunnels
i @northern_polytunnels_hobby/