FlexiTunnel
Assembly and User Instructions

Updated March 2014

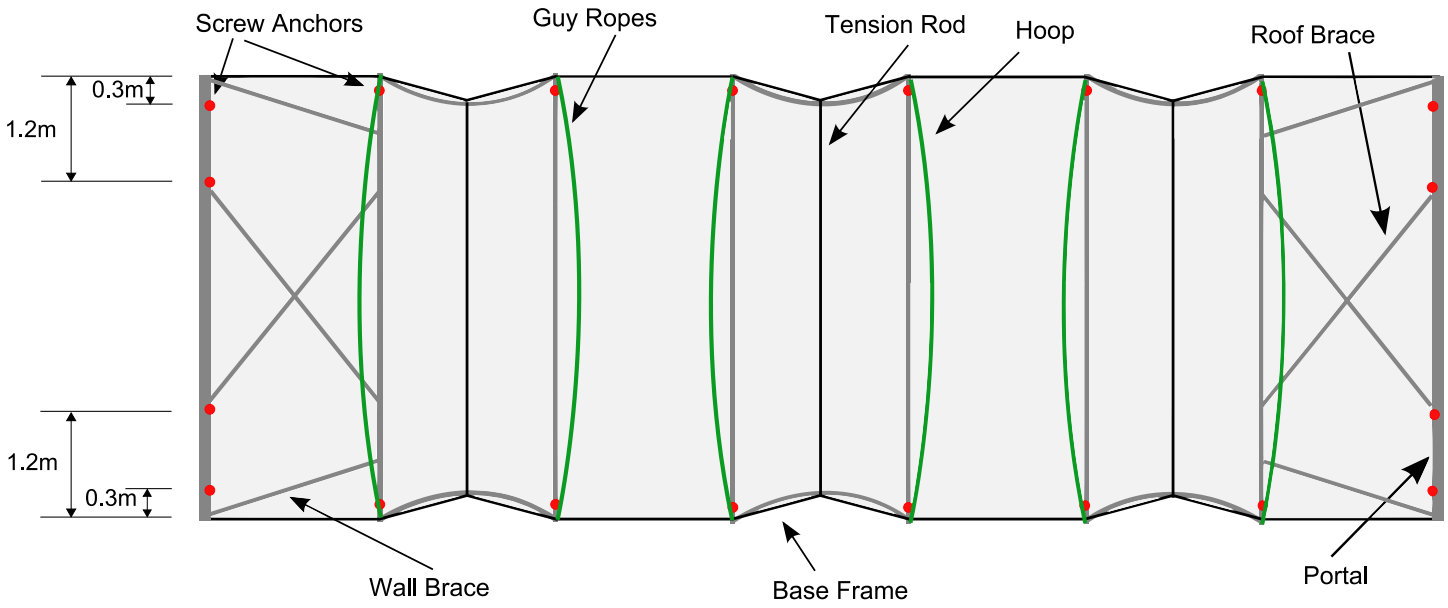
Note

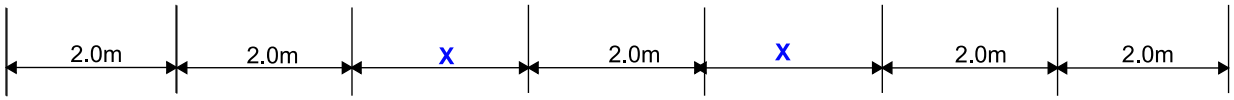
- These Instructions are for all FlexiTunnel models.
- The Instructions are in 5 parts. If you are unfamiliar with any aspect of the assembly of your FlexiTunnel please read the whole instructions prior to commencing assembly.
- For personal help please call us on (03) 322 4960

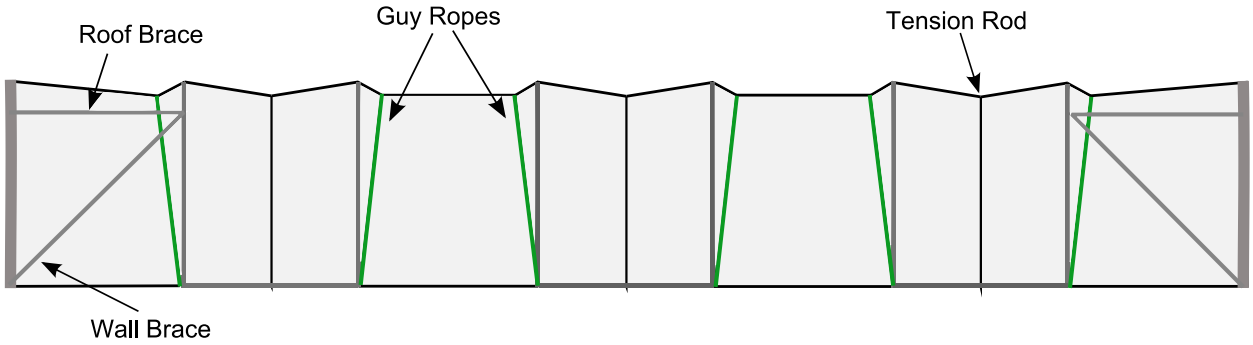
1. Set-up Diagram
2. Film handling Instructions
3. "Duralock 2" Film Fastening System Installation Instruction
4. Step by Step Assembly Instruction
5. Calf Rearing Concept (Specific Instructions)

1. Set-up Diagram

*Flexi*Tunnel Model Set-up Diagram







X= generally 2m but can be increased or decreased slightly to suit

2. Film Handling Instructions

1. Some greenhouse films contain slip additives to aid installation. This will wash off in time or can be removed by washing. Note: Wash hands after handling film and before preparing or eating food.

2. Do not leave unwrapped film in roll form exposed to direct sun light. If not being used immediately, store in cool, dark, dry area. Do not store rolls on their ends.

3. Avoid dragging or rubbing film against abrasive objects (uneven or rocky ground) whilst handling.

4. Avoid fitting film in windy conditions.

5. For best results do not fit film in very hot or very cold conditions, as it may be difficult to judge and obtain the correct film tension. Ambient air temperature should be considered when tensioning film. Note: If the film is installed in unsuitable weather conditions, it may require re-tensioning at a later date. To re tension film, simply undo the guy ropes and tensioning rods and re-tighten the film at the tensioning stay using the tool supplied.

6. Regularly inspect greenhouse film and repair any tears or holes that may appear over time due to general wear and tear. Use the supplied film repair tape.

7. Avoid contact of pesticides with the film when spraying. Some chemicals could shorten the life of the film.

8. To clean film use a suitable cleaning agent (not chlorinated or petroleum based cleaners)

3. “Duralock 2” Film Fastening System Installation Instructions…

DURALOCK 2 Film and Fabric Fastening System

Duralock 2 is a continuous bead fastening system for film and fabric and is specifically designed for high wind-load applications.
Duralock 2 is a three-component system consisting of the aluminium extrusion (single or twin groove), a plastic (PVC) channel and a plastic (PVC) bead.
Duralock 2 is capable of retaining materials of variable thicknesses.
Duralock 2 is simple to assemble and just as easy to take apart for re-skinning or changing of skinning material (eg changing from film to fabric).

Important reminder notes!

- The correct assembly process is required. The position of the film, the direction of the locking lug on the PVC channel, the full seating and opening of the channel before the bead insertion is essential for reliable holding and prevent damage of the film.

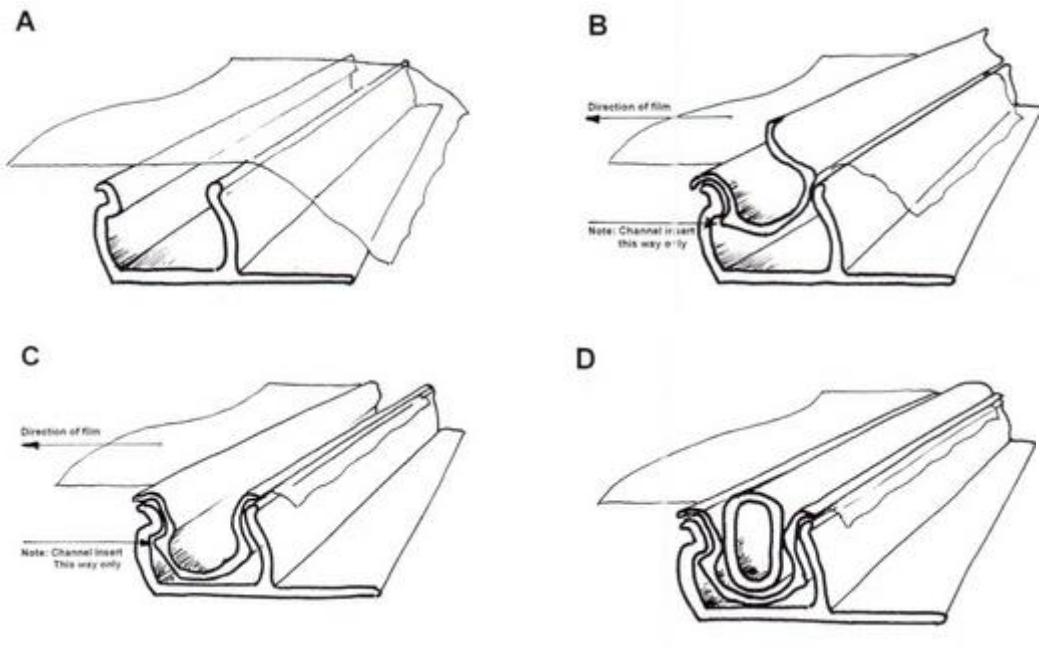
- Do not hit the channel and locking bead into the aluminum groove in one motion, **film damage will occur!** Always assemble the two PVC inserts individually and completely.

- If removal of the strip is required, **always** remove the locking bead first, and then pull the trailing edge (of the channel) of the film. Attempting to remove the channels in any other way can result in damage to the film and clipping system.

Note that the film can “temporarily” be fastened to the portals if so desired with the help of short pieces of plastic inserts (channel). Once the film is in the right place and at the right tension, the rest of the channels and beads can then be installed. Do not hesitate to reposition film by taking out parts of installed beads and/or channels. This can be done as often as needed.

…"Duralock 2" Film Fastening System Installation Instructions continued

Installation Instruction



1. Position or tension film across jaw of aluminum extrusion **(A)**.
2. Important: Ensure that the PVC channel insert has the locking lug facing in the direction of the film **(B)**.
3. Always insert the PVC channels beginning at their ends not their middle. The channel insert with its front "Locking Lug edge" facing forward is inserted firstly. Tilt the front edge down whilst easing film tension from behind and locate the channel insert into the aluminum groove using a rolling motion. Leave a small gap between strips (5 – 10mm) to allow for heat expansion.
4. Sliding your finger along the jaw of the channel will fully open the insert and position the film in the aluminium base **(C)**.
5. Install the locking bead. Ensure that the channel is fully seated and that the jaw of the channel is fully open before pressing locking bead into place.
6. Beginning at its end press the PVC locking bead with rounded edge facing down fully into position **(D)**. A soft-headed mallet may be used to gently assist.

4. Step-by-Step Assembly Instructions

Tools required to setup a FlexiTunnel

- A string line or rope to help setup the base frames in a straight line
- A tape measure
- A pair of scissors and/or a knife
- Two adjustable spanners or socket set
- A hacksaw or other tool to cut plastic inserts
- A heavy hammer

Step 1
(Step 1 and step 2 can be done well before the proper assembly of the tunnel begins!)

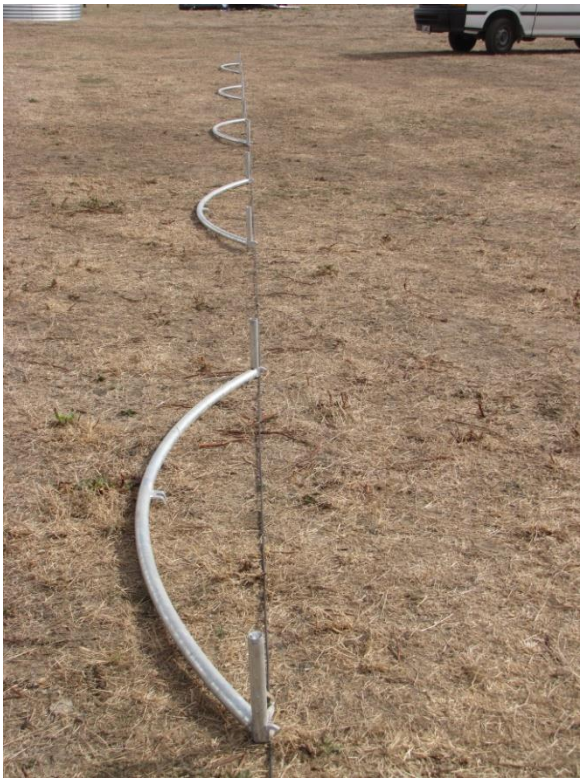
Attach a length of chain to each end of every hoop, about 60cm above ground level. Make sure that the first link faces towards the bottom (the end of the hoop) and that the pipe clamp is securely tightened to the hoop.

Step 2
(Note that the Hoops need to be completely dry in order to proceed with this step!)

Apply the *Polyguard* self-adhesive tape to the "outer side" of the hoops. It provides a soft barrier between the frames and the greenhouse film and reduces heat transfer. Ensure that the hoop's surface is clean and dry and the air temperature is above 10 degree before applying the tape.

Step 3

Use a string line and set out the Base Frames on one side of the tunnel. Remember that the two Portal are going to be 2 meters away from the end of the first and last Base Frame. The theoretical spacing between the Base Frames is 2 meter (refer to **"Set-up Diagram"** and also see note in "Setting-out of tunnel", in Chapter 5, *Calf Rearing Concept {Specific Instructions}*)



Step 4

Now set out the opposite side of the tunnel by installing the string line parallel and 5 m apart from the first side.

Step 5

It is very important that the two rows of Base Frames are set out "square to each other". Use some square shaped shape to line the first Base Frames up square to the one on the other side.

Step 6

Install the Screw Anchors as shown. Space them on the “inside of the tunnel” about 15 to 20 cm away from the Base Frame. Screw Anchors in as far down as possible, particularly in lighter or softer soil.

Screw in the additional 4 anchors on each end of the tunnel to later secure the Portals to. These Anchors need to be positioned exactly two meters from the line of the last hoop, 2 of them about 30cm from the edge of the tunnel and 2 about 1.2m in! Refer to the “Set-up Diagram”.

Step 7

Install the hoops on to the Base Frames. NOTE that you have two “End Hoops”, which have a pair of clamps attached to the horizontal member of the Hoops. These two “End Hoops” need to be installed next to the Portal!

Step 8

Install the Turnbuckles and tighten as hard as possible. Then tighten counter nut to prevent unintentional slackening of the turn buckle. NOTE that the Turn Buckles may need re-tightening after the initial installation, as the Base Frames can settle into the soft ground!

WARNING: Not following the above instruction can cause failure of the screw anchor system and lead to severe damage of your tunnel house during extreme weather conditions!

Step 9

Sliding Door Bottom Guides

These notes (Step 9) apply to greenhouses with sliding door portals only. The sliding door guides shown on the right are pre-fitted at the factory. In order to simplify the installation of the film to the portal, it is recommended to temporarily remove the guides by undoing the two tek screws from the underside of the portal.

Step 10

NOTE: Do NOT cut the film for the portals off the main film role. There are 2 separate portal films supplied. Fit film to the Portals. **Before you start this process, please familiarise yourself with *"Duralock 2 Film Fastening System" Installation Instructions.*** Lay film across Portal. Hold the film stretched and start fitting the plastic channel insert, beginning at the bottom side.

Step 11

Cut PVC Channels to lengths as required.

Step 12

Proceed with the rest of the Portal. Note, how the film can initially be held in place with short pieces of channel inserts.

Step 13

Roughly cut the door and window openings and fit all the channels. If the film needs re-setting at any stage, simply remove and re-fit again as explained in detail under *“Duralock 2, Installation Instructions”*

Step 14

Install Locking Bead. Before doing so, please re-assure yourself that the Channel Inserts are fully seated and that the jaw of the Channel is fully open, before pressing the Locking Bead into place. A soft-headed mallet may be used to gently assist.

Step 15

Trim film.

Step 16

In Step 17 you will be setting up the Portals. Before going there please first slacken the clamps on the horizontal member of the End Hoops (the first and the last Hoop of the tunnel) and shift them as close as possible to the curved part of the Hoop. **Don’t re-tighten grub screw just yet!**

Step 17
Now set up the Portals exactly 2 meters away from last Hoops hard against the four Screw Anchors (Screw Anchors will be on the inside of the Portal!) and fit a pair of Roof Braces between the Hoop and the Portal.

Step 18
Fit the four Spikes to the base of the Portal.

Step 19
Fit the top end of the Wall Braces onto the Clamps on the horizontal bar of the End Hoop. Tighten as hard as possible.

Step 20
Use Allen key to slacken the two grub screws which allows you to extend the Wall Braces as required to reach the “pipe bracket” at the corners of the Portal.

Step 21
Fit the Brace to the bracket and securely tighten the grub screw.

Step 22
You can now re-tighten the top clamp to the Hoop.

Step 23
Now push the Portal into exact vertical position and re-tighten the two grub screws on the Wall Brace to hold everything in the proper position.
IMPORTANT! Check and ensure that ALL the grub screws in ALL the clamps are securely tightened. Failure to do so may allow braces to come loose and threatening the structural integrity of the whole tunnel!
Fit the chains and Turnbuckles to both portal (see also step 7). The tunnel is now ready to have the main film (roof cover) installed.

Step 24

On a wind-less day, the film can be un-rolled alongside the tunnel, then opened-up and simply be pulled over the entire tunnel structure. However, on slightly windy day it may be safer to unroll the film “inside” the tunnel. With only about the first 10 meters un-folded, the film can now be pulled over the last two Hoops across to the first Portal.

Step 25

Fasten the end of the film to the first Portal.

Step 26

Rather than insert the full length of channel and locking strip at this stage, the film can simply be “tacked on” with short pieces of channel (and locking strips) to keep the film temporarily positioned.

Step 27

Grab the remaining length of film and bring to the “outside” of the tunnel. Un-fold and pull it over the whole tunnel taking care not to let the film snag on any bolts, hooks, etc.

Step 28

With 2 or 3 people pulling the film “as hard as possible” over the portal, position it exactly and again tack it to the Portal as described in Step 26. **NOTE: It is near impossible to over-tighten the main film. On the other hand, a film that is not tight enough can lead to undue stress in severe weather conditions.**

Step 29

You can now re-position and re-tack the film if necessary and once satisfied with its tightness and position, the short “tacks” can now be replaced with the full length channels and looking strips, best started from the top of the Portal. As you get towards the ground (or the open side on a calf rearing tunnel) fold the 250mm “spare” film back up on the inside so that it too is attached under the plastic inserts. **IMPORTANT NOTE: The folded edge of the film must stop short of the end of the aluminum extrusion. And the plastic insert then needs to go past the edge of the film!**

Step 30

Place the tensioning rods by simply “walking” them into position from one end of the tunnel (with two people, each holding one end of the semi-circle rod.

Step 31

Slacken the counter nuts by 10 to 20 mm (don’t touch or remove the Nylock nuts) and hook the rods onto the Base Frames in the following order: Start by installing the rod closest to the centre of the tunnel first, then the two halfway down both sides and so on, thereby achieving equal tension on the whole length of film. Tighten counter nuts!

Step 32

Fit Guy Ropes to the Base Frames on one side of the tunnel and throw over the tunnel to the other side. If you are installing a Calf Rearing Tunnel, your Guy Ropes will be fitted with a length of black sleeve, that needs to be on the open side of your tunnel.

NOTE: The Guy Ropes need to be positioned between the Frame Sets and NOT in the same section as the Tension Rods!

Step 33

Pull the ropes under the Base Frame hooks and bring back up through the loop in the Guy Rope. Tighten and tie off securely.

Step 34

Installing the sliding doors and track: Attach the track to the outside of the Front Portal. Remove the two end stops from the track and slide the two doors into position. Re-attach the end stops.

Step 35

YOUR TUNNEL IS NOW FULLY INSTALED!

5. Calf Rearing Concept (Specific Instructions)

Instructions, advice and tips specific to use of a FlexiTunnel as a Calf Rearing Facility

1. Setting out of Tunnel
2. Main Plastic Film Cover of the Tunnel (“Narrow Widths”)
3. How to place the Rails past the Wall Braces
4. Installation of Film Protection Grates
5. Installation of “Hot-Wire Kit”
6. Deep Litter Composting System

1. Setting out of Tunnel

The distance between the base frames, which is normally 2m, can be increases by about 10cm in order to increase the total overall length of the tunnel by up to a half a meter (this is somewhat governed by the lengths of the plastic film cover). This allows for just that little bit more space to set up the yarding, which is in multiples of 4m lengths over the lengths of the tunnel. However, this is not that crucial, since some of yard units can simply be “overlapped” if so required.

2. Main Plastic Film Cover of the Tunnel (“Narrow Widths”)

Unless specifically advised, all FlexiTunnels purchased as a “Calf Rearing Concept” are supplied with a “narrow” film cover (1 meter narrower than a standard cover) to allow for one permanent side opening.

For installation of the film please refer to the standard Assembly Instruction as shown from 24 to 29.

However, you need to make the following adjustments:

- When placing the film cover over the hoops, keep it about 50cm “off-centre” to the peak of the hoops
- One edge of the film should stop about 750mm short of the ground, while the edge of the opposite side should go about 250mm “past touching” the ground.
- As described in step 28, on both sides fold the film about 250mm back up to the inside and make sure that the plastic inserts extends over and past the fold.

3. How to place the Rails past the Wall Braces (Gates)

Connect the two end rails with a stand as shown, using the two outside up-stands. You may need to slightly “re-shape” the U-Hook to make it fit.

Never attempt to disconnect the Wall Brace on a fully installed tunnel in order to fit it through a gate!

4. Installation of Film Protection Grates

There is one point in each pen in the tunnel where stock could potentially do some damage, while trying to chew the film. This is along the Tensioning Rods on the back wall of the tunnel. We have supplied one Protection Grate that needs to be installed directly in front of the Tensioning Rods as shown in the image below.

PLEASE NOTE: The grate needs securing to the gate by tying it on with some lacing wire, cable ties, etc. to prevent dislodging by calves

5. Installation of “Hot-Wire Kit”

The “Hot Wire Kit” can be used to “electrify the opening edge of the film” on your tunnel. This will prevent calves from liking or chewing the film edge, while at the same time the film can be kept as low as possible, just above the animals head height, in order to conserve as much heat as possible.

The two yellow insulators are screwed to the End Portals at the desired height. Teck screws are provided and factory pre-installed at three different height options.

The black insulators are fitted to the hoops facing towards the outside with the help of the pipe clamps supplied. A hot wire can then be installed weaving through the Hoops/Guy Ropes/Tensioning Rods just below the films edge.

6. Deep Litter Composting System

The recommended “Deep Litter Bedding” in our FlexiTunnel Calf Rearing Concept plays an integral part in guaranteeing the successful rearing of calves year after year, effectively preventing possible disease build-up.

The deep litter should ideally be placed right on top of the natural ground to help facilitate easy access for the microbiological soil life.

If additional drainage is required, it is recommended to scrape away 10 to 30cm of topsoil, add any free-draining material and replace the topsoil on top of it.

Different timber by-products can be used as deep litter. The ideal mix however is made up of some fine (shavings, sawdust, etc.) and some coarse particles (bark, peelings, wood chips, etc.) to help with both, moisture absorption and aeration. Straw is not recommended as it easily mats down.

In order to properly function, the deep litter needs to have a minimum depths of 250 to 300mm but can be up to ½ meter deep.

Passive solar gain in the FlexiTunnel and the microbial activity raises the temperature in the deep litter, helping to efficiently composting the manure and the removal of pathogens. Heat released will also warm the bedding and the tunnels environment.

Any excess manure can be dug into the litter once or twice a week.

After calving season (or every 2 to 3 months) the top 5 to 10cm of litter should be turned over and some fresh litter added if needed.

All bedding can be replaced every 3 to 5 years and used as top quality compost.

- Never place deep litter on top of an impermeable surface (concrete, etc.).
- Never have less than 250mm depths