

# Summary of making Inner for Triplex Tent

## Aim

To make an inner for the Zpacks Triplex shelter to carry away condensation drips, to increase privacy, reduce sun intensity.

To do this:

- Without adding much weight.
- Without substantially permanently modifying the Triplex. Any modifications need to be either easily removed or not interfere with the use of the shelter without the inner in place. Therefore the inner must be easily removed. The most significant modification was sewing some Velcro tabs along the edge of the roof seam. This did not puncture the roof itself.
- Without taking too much usable space. Ended up taking about 50mm from the roof height.

## Solution

In its simplest form the inner is a sheet of 10 denier (25gsm) ripstop nylon that is attached by elasticised Velcro tabs to the underside of the Triplex roof. A serendipitous design feature of the Triplex makes this easy and automatically provides about 50mm gap between the inner (nylon) and outer (cuben fiber) layers.

It is quite difficult to photograph the whole of the inner attached to the shelter but these should give an idea.

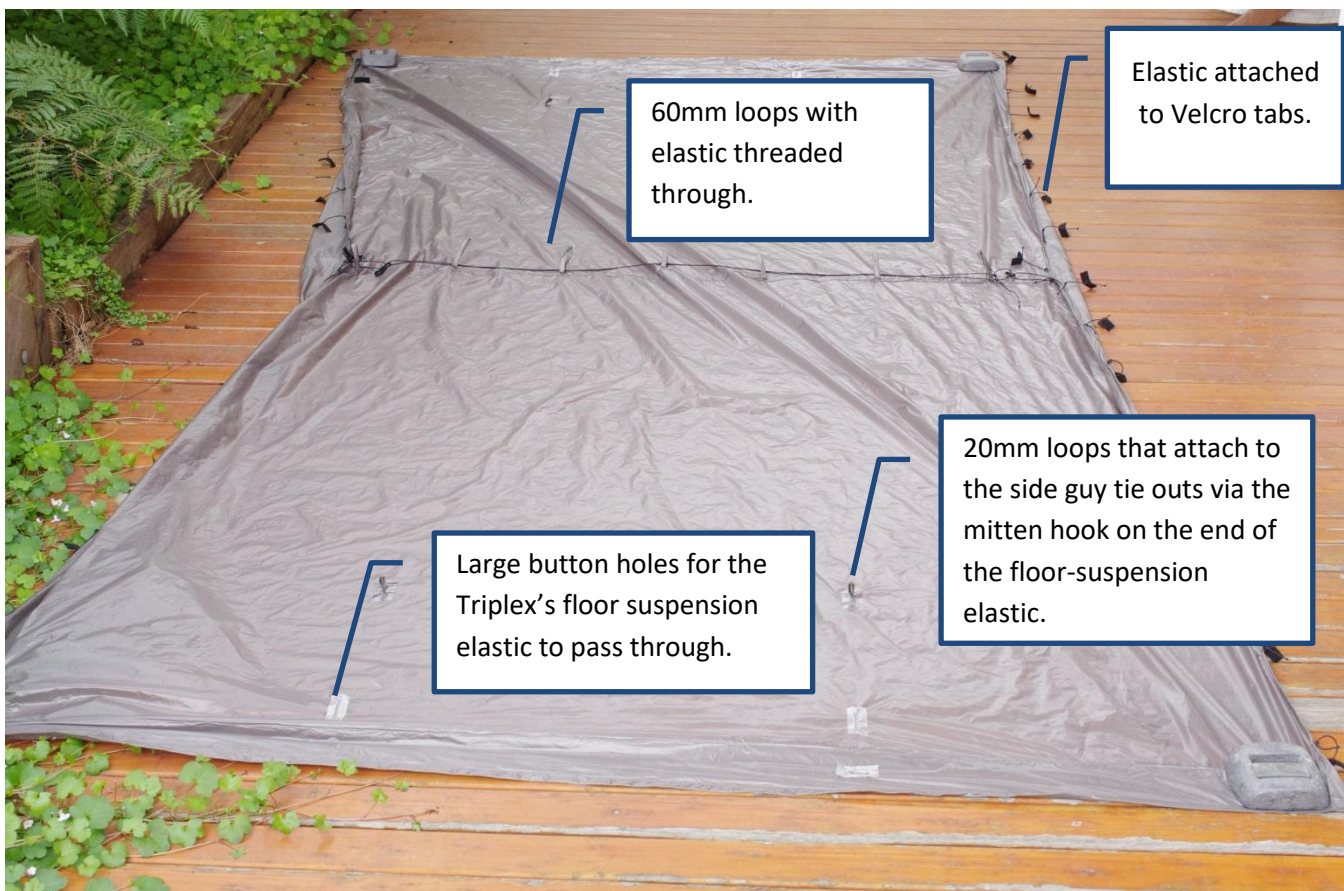


Figure 1 – The simple form of the inner laid flat. It is just a sheet of ripstop nylon about 2900x1480mm with loops sewn on the sides and longer loops across the middle at the apex. Pieces of elastic (about 60mm long) are attached to the side loops and Velcro (hooks) are tied on the elastic. A length of elastic cord passes through the loops at the tent apex and mitten hooks on the end of the elastic clip onto existing loops on the Triplex (near each pole).



**Figure 2 – The simple inner attached to the Triplex. The purple inset shows the elastic cord joining the inner to the seam of the Triplex using Velcro. I used “Reusable Velcro Wrap” tied to the elastic. This has hooks on one side and loops on the other. I chose this because the hooks tend to be less aggressive to other fabrics than the standard Velcro hooks. A disadvantage is that they tend to stick to each other, which they would not do if they did not have to loops.**

**The green inset shows the Velcro tab sewn around the natural seam on the Triplex. Sewing this did not put any needle holes through the roof or walls of the shelter. The Velcro attached to the inner wraps around this tab of Velcro loop.**

**Notice that the elastic is positioned to pull the apex of the inner towards the corners of the tent. This helps keep the inner smooth.**

The inner was slightly narrower than the roof of the Triplex. This meant that it put a little tension on the elastic that attached the inner to the roof. This had a few benefits:

- It kept the inner somewhat taught. Although the inner still sagged a little under its weight it formed a smooth surface (Figure 3).
- It pulled the roof seam in a little. This created a gap (about 50mm) between the roof and the inner (Figure 4). The inner will make contact with the roof if you push on it or there is a strong breeze. However it seems to function well enough and is very effective at keeping condensation from dripping inside the tent.





Figure 3 – Showing tautness and reasonable flatness of the inner. Note that this picture is before the button holes were added for the floor suspension to pass through.



Figure 4 – Showing gap (about 50mm) between inner and outer

## Optional doors

I also attached some doors to the inner. My wife felt that the tent may be a bit drafty in very cold conditions and liked the idea of being able to seal ourselves in. The doors probably added about 50g and they do help. Time will tell if the reduced ventilation is a problem.

The doors are essentially triangles of rip-stop nylon that are hung from the edge of the inner. They have Velcro hooks to attach to Velcro loops glued onto the triplex floor.



Figure 5 – Showing the Inner with the doors closed. The ties hanging down are so that the doors can be rolled back and tied out of the way. The doors are held closed at the bottom by sticking to Velcro strips that are glued onto the tub floor. Note that at the apex the doors are sewn to the apex then there is a gap before the sewing starts again to attach the doors to the edge of the inner. This gap provides ventilation and allows the apex of the inner to form a smooth curve, without having to recreate the curve of the apex at the top of the door.





Figure 6 – Showing the apex of the inner with the doors tied back.

## Materials

Rip-stop nylon was Argon 67 (Titanium colour) purchased from [www.tiergear.com.au](http://www.tiergear.com.au). The width of this was perfect for the Triplex. This weighs about 25g/m<sup>2</sup> and is very soft.

The Reusable Velcro Wrap (12mm wide) was Velcro brand and is intended for organising cables etc. Purchased from Bunnings hardware.

The elastic was 1/8" from [www.zpacks.com](http://www.zpacks.com).

## Performance

So far the inner has performed very well. Overnight in a frost hollow on the Baw Baw plateau (VIC). Temperatures got down to -10°C. There was lots of condensation frozen onto the inner. We had all the Triplex doors down and the inner doors on one side completely closed and partly closed on the other. After midnight the wind came up and the temperature rose to +5°C by morning. Despite the breeze, we did not notice any condensation spray as the frost thawed.

Another night in Walls of Jerusalem there was lots of condensation and in places the inner stuck to the outer layer but the water did not significantly come through the Argon 67.

Not yet tested in heavy rain.