To Manufacture a Shade sail by either using Z25 or DriZ fabric.

The concept is easy, provided that you follow the 3 basic rules.

These Rules are:

1. **Size of the net. - Coloursh**ade is cut at 1% smaller than the final required sail. DriZ is cut equal to the required sail size.
2. **Catenary of the perimeters. – To be cut at 5% (or more than 5%) of the distance between the tensioning points**
3. **Cable length. – either**

a. Continuous Cable. (CC) – One continuous cable that is tensioned after the sail is installed.

b. Independent Termination Technique. (ITT) – Individual Cable between each attachment D-Ring. The cables are attached to the D shackles with crimped ferrules, with the cable cut to the same length as the seams.

Continuous Cable. (CC)

Independent Termination Technique. (ITT)

If you follow these rules, you should never make a mistake.

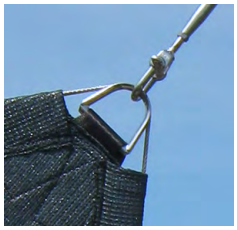
IMPORTANT :

1. Visit the location where the sail is to be installed.
2. Identify where the eyebolts will be installed. (Attachment point)
3. Now measure the straight line distances from one attachment point to all the others so that you know the exact shape and size of the proposed area to be covered.
4. When you get back to your office, you can now draw out the exact area.
5. Keep in mind that you will need to fix an eye-bolt at each point where the sail will be attached.
6. Now before continuing, you need to know what system you will be using.

These are:

1 **Continuous Cable (CC):**

The cable runs around the special D-ring, around the perimeter of the sail. The cable is then tensioned after the sail has been connected to the attachment points by pulling these cables past each other and then clamping the cables together using Crosby Clamps. (See above rules)



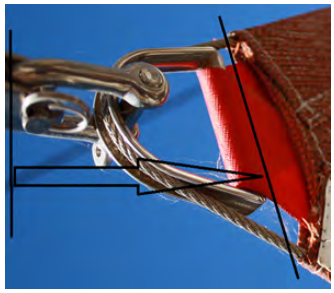
or

2 **Independent Termination Technique (ITT):**

Individual Cable between each attachment D-Ring.The ends of the cable are crimped onto the D-rings. (See above rules)

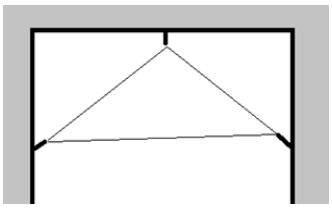
If you are using the Continuous Cable, then

a. Remember that the sail will have a specially adapted D-ring that allows the cable to run around it on each corner / attachment point.



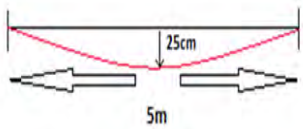
b. This D-ring is attached to the wall eye bolt by a U – shackle or tensioner. You need to know how far these units extend from the wall. (i.e. How far will the shade netting be from the wall where the eye bolt is attached.)

c. Now, draw the diagram of the sail required, using the measurements as now calculated. (subtracting the distances that these units extend from the wall)



d. If you are using Z25 fabric, reduce these measurements by a further 1%. This means that for every 1m, you reduce the length by 1cm. (e.g. 5,5m = 5 ½ cm) etc. If you are using DriZ, then do not reduce this measurement.

e. Then, using the measurements as calculated, you must create a catenary of 5% +. (The catenary is the angle that needs to be cut into the edge of the fabric from one attachment point to another.) This means that for every 1m, the catenary must be 5cm. (e.g. 5,5m = 27 ½ cm) A catenary must be cut into the fabric between all attachment points.



Catenary Calculation:
5cm per 1m
25cm per 5m

f. Cut out the fabric using these calculations.

g. Attach the D-rings to the fabric at each connection point by using a PP webbing. The webbing must be sewn to the shade netting, so that the two ends of the webbing form a minimum angle of 30 degrees and a maximum of 90 degrees. Reinforced corners are not necessary.

h. Before sewing the seam into the edges, fold and sew a 6cm x 6cm PVC piece at the mouth of each seam so that the PVC is hidden by the shade netting once the seam has been folded. This is where the cable will enter the seam.

i. Some companies prefer to enclose the stainless steel or galvanized steel cable in the seam as it is being sewn.

j. The cables are cut with an over lap of at least 300mm.

k. On site, the sail is then lightly attached to the eye-bolts by using the U-shackles.

l. Once the sail is secure, a rope – puller is used to mechanically tighten the cable. Once the required tension has been reached, a minimum of 2 Crosby clamps are used to clamp the cable at the point where the cable overlaps.

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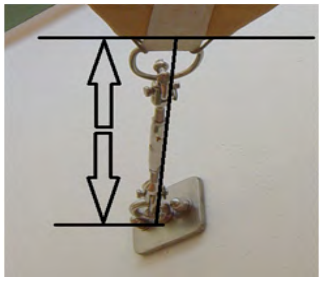
OPTION

Again, some companies also use a tensioning device that can be used to further tension the sail if necessary. This tensioning device can be used as a quick release system, such as to remove the sail before a cyclone.

If you are using the ITT system, then the main difference is that you will require at least 1 tensioning device (better to have two tensioning devices) at 1 or 2 attachment points.

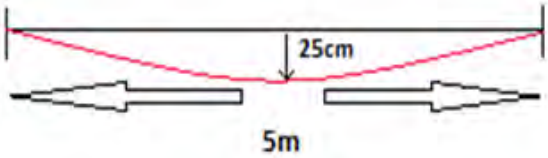


a. Now, you will need to include the additional tensioning devices in your calculations. The tensioning device will replace the U-shackle. So you will have the eye-bolt, tensioning device attached to the D-ring of the sail. You need to know how far these units extend from the wall. (i.e. How far will the shade netting be from the wall where the eye bolt is attached.)

b. Now, draw the diagram of the sail required, using the measurements as now calculated. (subtracting the distances that these units extend from the wall)

c. If you are using Z25 fabric, reduce these measurements by a further 1%. This means that for every 1m, you reduce the length by 1cm. (e.g. 5,5m = 5 ½ cm) etc. If you are using DriZ, then do not reduce this measurement.

d. Then, using the measurements as calculated, you must create a catenary of 5% +. (The catenary is the angle that needs to be cut into the edge of the fabric from one attachment point to another.) This means that for every 1m, the catenary must be 5cm. (e.g. 5,5m = 27 ½ cm) A catenary must be cut into the fabric between all attachment points.



Catenary Calculation:
5cm per 1m
25cm per 5m

e. Cut out the fabric using these calculations.

f. Attach the D-rings to the fabric at each connection point by using a PP webbing. The webbing must be sewn to the shade netting, so that the two ends of the webbing form a minimum angle of 30 degrees and a maximum of 90 degrees. Reinforced corners are not necessary.

g. Before sewing the seam into the edges, fold and sew a 6cm x 6cm PVC piece at the mouth of each seam so that the PVC is hidden by the shade netting once the seam has been folded. This is where the cable will enter the seam.

h. Some companies prefer to enclose the stainless steel or galvanized steel cable in the seam as it is being sewn.

i. One end of the cable is then crimped onto the one D-ring. Then the other end is crimped onto the other D-ring so that the cable is the same length as the fabric (along the seam following the catenary). This is important.

j. On site, the sail is then lightly attached to the eye-bolts as well as the tensioning devices.

k. Once the sail is secure, tighten the tensioning devices until the sail is at the required tension.

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