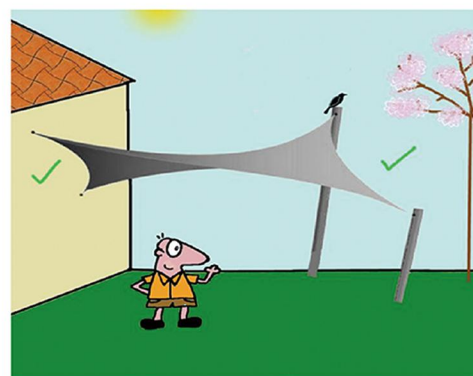
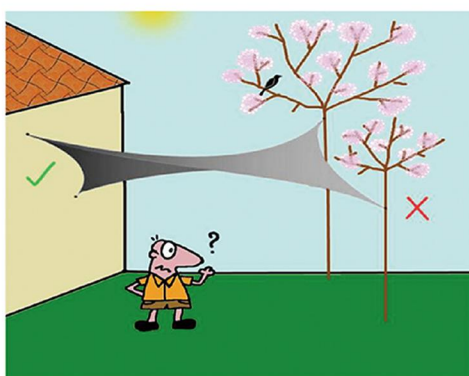
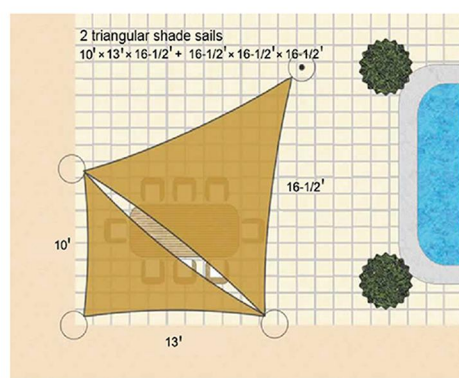


I .Planning Your Shade Sail Structure

Shade sails can be installed singly or as multiple sails to cover a larger area. The choice of the type and disposition of the sails is driven by the area to be shaded and the attachment points available. For example, to cover a larger corner space, it is possible to use two standard size sails and only one mounting post, with a 16-1/2' equilateral triangle and a 12'x13'x16-1/2' right angle triangle

Shade sails are designed to be installed as fully tensioned structures - the amount of tension required depends on the size of the sail and the degree of wind exposure. Larger sails and windy locations will require higher tension. If the area to be shaded is completely sheltered from the wind, or indoors, the sail can simply be tensioned sufficiently to remove the slack. Safety First - Mounting points must be carefully chosen, some potential mounting points may not be suitable for resisting the tension forces.

In a typical outdoor installation of a sail with a surface area of up to 200ft², a tension of 70-140LB will be required at each corner. This initial tension will increase in windy conditions by as much as ten times so the fittings and mounting points must be able to withstand very large forces. Faced with this requirement, the mounting points must be very carefully selected - an existing structure such as the wall of a house would be suitable whereas a small tree or wooden fence post may not be sufficiently robust.



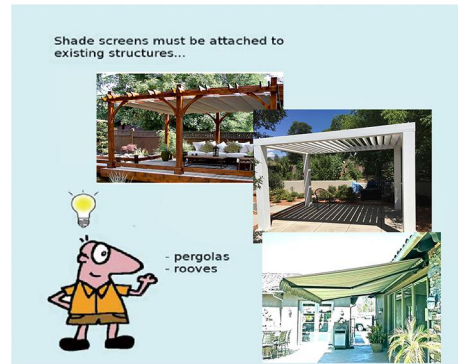
II .Shade Screens For Existing Structures

Shade screens are a shade product that are related to shade sails but have some key differences shade sails.

- Have curved edges
- Have one attachment point at each corner
- Are designed to be installed under tension

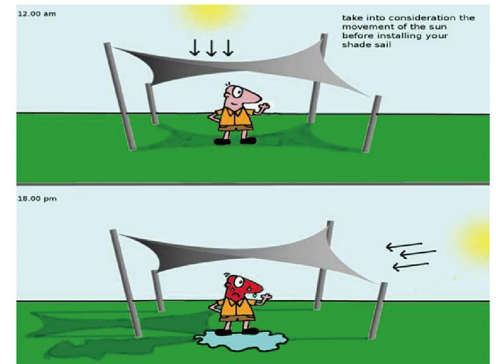
Shade Screens

- Are rectangular and have straight edges
- Have eyelets along the sides
- Are designed for attachment to an existing structure



III .Pay attention to Movement of the Sun

In planning the layout of a shade structure the movement of the sun must be considered to take account of the position of the sun at different times of a day and during different months of the year. Most shade is likely to be required during the summer season, particularly during the afternoon and early evening. As a tensioned shade structure is designed to remain in place there will often be a compromise in terms of optimum afternoon and evening shade. In the afternoon the sun can be almost vertically overhead but in the evening it may still be very hot but with the sun much lower in the sky.

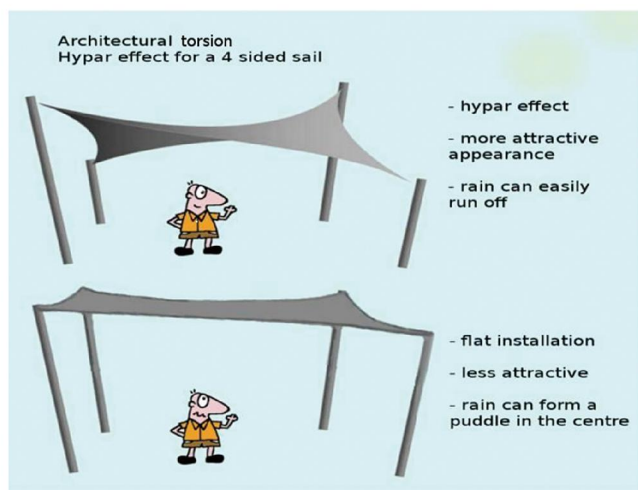


IV .Shade Sail Installation and Architectural Torsion

Shade sails have one attachment point at each corner and can be installed so that the sail is completely level with the same height at each corner.

However, this has two disadvantages:

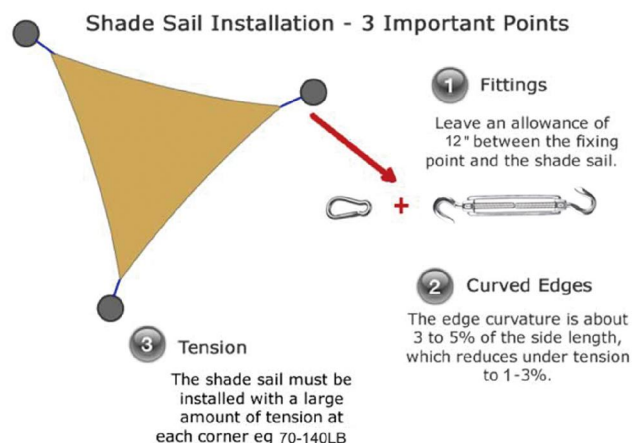
1. In heavy rain the water will form a pocket in the sail - although the sails are breathable and the water will eventually drip through
2. A flat, horizontal installation is not the most aesthetically pleasing a more visually solution will have varying heights for the attachment points and a slope to allow heavy rain to run off. In the case of a four sided sail they can be installed with torsion for a hyper architectural effect.



V . Correction installation.

In order to fully tighten the shade sail it is necessary to leave a gap between the sail and the fixing points for the adjusting tensioners and to allow for the stretch of the sail under tension. An allowance of 8" would be suitable for sails of up to 100 ft2 - this being the distance between the fixing ring of the untensioned sail and the attachment point.

This allowance, together with the curved edges of the sail means that the shaded area will be a little less than might be expected. Also note that if two sails are installed side by side, there will be an unshaded area between the two due to the curved edges. This can be avoided by overlapping the sails, but they should not be allowed to touch as this will damage the fabric.



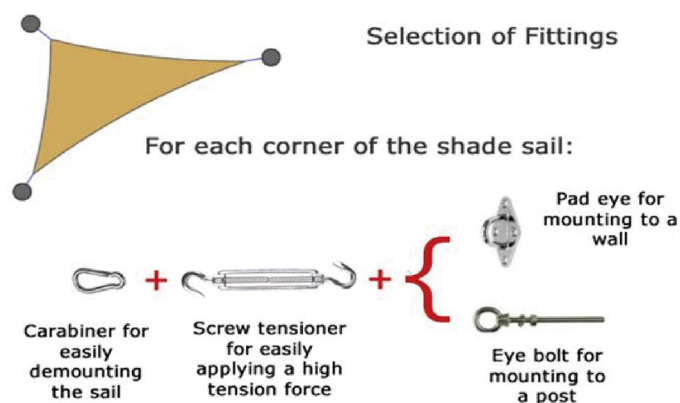
VI. Fast installation and fast unloading

Precaution is required when considering attaching to existing structures, such as your home. In the event of bad weather and strong winds, the loads applied to the fastenings by the sail can be enormous and should not be underestimated. To ensure that your existing structure is appropriate to support these loads, it may be necessary to consult a qualified builder. We recommend that you remove the sail when the weather forecast predicts strong winds. Using a carabiner (snap hook) at each mounting point will allow a shade sail to be taken down in less than 5 minutes.

What Type of Fasteners are Required?

At each corner of the sail, we recommend:

- A Carabiner - for easy disassembly (You need to buy the Sun Shade Sail Hardware Kit from Amazon.)
- Screw Tensioner - to easily apply adequate tension to the sail
- Pad-Eye or Eye Bolt to provide an attachment point on a wall or post



VII .Mounting Posts - Wood or Metal?

In order to resist the high forces at the mounting points, shade sail mounting posts must be of adequate diameter and securely embedded in the ground. Wooden posts can provide an economical solution but must be of at least 5" diameter and be pressure treated against rot. Steel posts are generally a more expensive solution with painted or galvanised steel being significantly cheaper than stainless. Bear in mind that steel posts are hollow and have a relatively thin wall diameter of only a few mm, so what may appear to be a very substantial metal post will not necessarily be as resistant as a wooden post of the same diameter. The following table provides a guideline to selecting metal posts, depending on the sail size wind condition.

Shade Sail Area in FT ²	Wind	Post Diameter		
		2"	3-1/2"	4"
< 150	Weak	✓	✓	✓
150-300	Medium	✗	✓	✓
300-400	Strong	✗	✗	✓
Maximum horizontal force at 7' height in Lb		200	400	550

Metal posts can be supplied for embedding in a concrete foundation or with a mounting place for bolting to the floor. The normal guideline for a post embedded in concrete is that there should be two thirds of the post above ground and one third of the post below ground. For an above ground height of 80", a total post length of 20" will be required, with 40" embedded in concrete. The diameter of the hole would typically be 14", but this is less important than the overall depth of the hole. In addition the diameter of the pole and the prevailing ground conditions will influence the diameter of the hole required.

