

**prism**



***DON'T PANIC!***  
*The kite pilot's guide to field repairs*

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# ***DON'T PANIC!***

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## **INTRODUCTION**

If you should damage your kite while hard at play, don't despair! There's almost nothing that can't be fixed on a sport kite, and usually you can do it yourself in a few minutes or less. Once you get past that first scrape on your brand-new kite you'll be able to relax and start having some real fun.

### **Things to remember**

Well-designed kites are built to make common repairs easy. Take care of your kite, but don't be afraid get out there and use it. It's amazing what'll work in a pinch to get you back in the air.

Be creative with what you have! Bring a few extra spars and a repair kit with you when you go flying; there's nothing more frustrating than being grounded on a perfect day.

Spare parts for just about everything we make are available 24/7 on our website: [www.prismkites.com](http://www.prismkites.com)

### **Kite Parts Terminology**

Please reference the main parts diagrams on pages 6 - 9 to assist you with the proper terminology needed to make your repair. The kite part terms have been italicized throughout this booklet for easy recognition.

## A few things this kit doesn't include:

**Glue:** For shelf life and liability reasons we don't include glue with this repair kit. But we recommend you get a small bottle to add to the kit as with some glue and a little creativity there's almost nothing you can't fix. The right glue for kites is any Cyanoacrylate-based instant glue such as Super Glue, Zap-a-Gap, or Crazy Glue, available in most hobby and convenience stores. We like a particularly strong version made by Bob Smith Industries, available from our online store at [www.prismkites.com](http://www.prismkites.com).

**Spars:** Replacement rods for the frame of your kite are usually the most expensive and specialized parts in its design, so there's no way to include an assortment that would cover enough models at a reasonable cost. But since they can break in a hard landing (or a car door), most people carry a few extras for their favorite kites just in case. Replacement rods for all current Prism models and most discontinued ones are easy to order direct from our website at [www.prismkites.com](http://www.prismkites.com).

**Common rods to break:** If you're a beginner, you're most likely to break a *spine* or a lower spreader in a hard nosedive. If your lower spreaders have an internal connector at the center T, the female side is three times more likely to break than the male.

If you're more advanced and starting to work on groundwork and recoveries, the lower (wingtip) section of your *leading edge* is likely to be the one you break as you learn.

**Lighter:** A cigarette lighter is handy for melting the ends of bridle line to keep it from fraying, and for heating the heat-shrink stop collars included with this kit. Pressurized windproof lighters can be a plus if you're working in strong winds.

**Hacksaw:** A fine-toothed hacksaw can be handy if you need to cut carbon or fiberglass rods on the fly. To keep your kit small and light, take a fine-toothed blade and break it in half, then wrap one end in tape to make a handle.

**Specialized Plastic Fittings:** The fitting assortment in this kit includes the broadest range of common types and sizes, and in many cases can be modified in a pinch to fit other sizes or kite brands. But some Prism kites have specialized plastic fittings unique to their design. While they'll seldom need replacement, they are all available from the Prism website should you need them.

## SAFETY

Use common sense when working on your kite. Broken carbon or fiberglass rods can give you nasty splinters if you're not careful, and even some unbroken fiberglass rods can cause splinters if you slide them through your fingers. The utility knife included in this kit is razor sharp, and if you use instant glue for repairs be aware that it can glue your fingers together or cause severe damage if it gets in your eyes. Small parts present a choking hazard so be sure to keep your repair kit away from small children.

## FLIGHT CAUTION

Please be sure to never fly your kite near:



AIRPORTS



POWER LINES



CARS



STORMS

**For questions, replacement parts or repairs:**  
[WWW.PRISMKITES.COM](http://WWW.PRISMKITES.COM)

# KITE FRAME & PARTS DIAGRAM

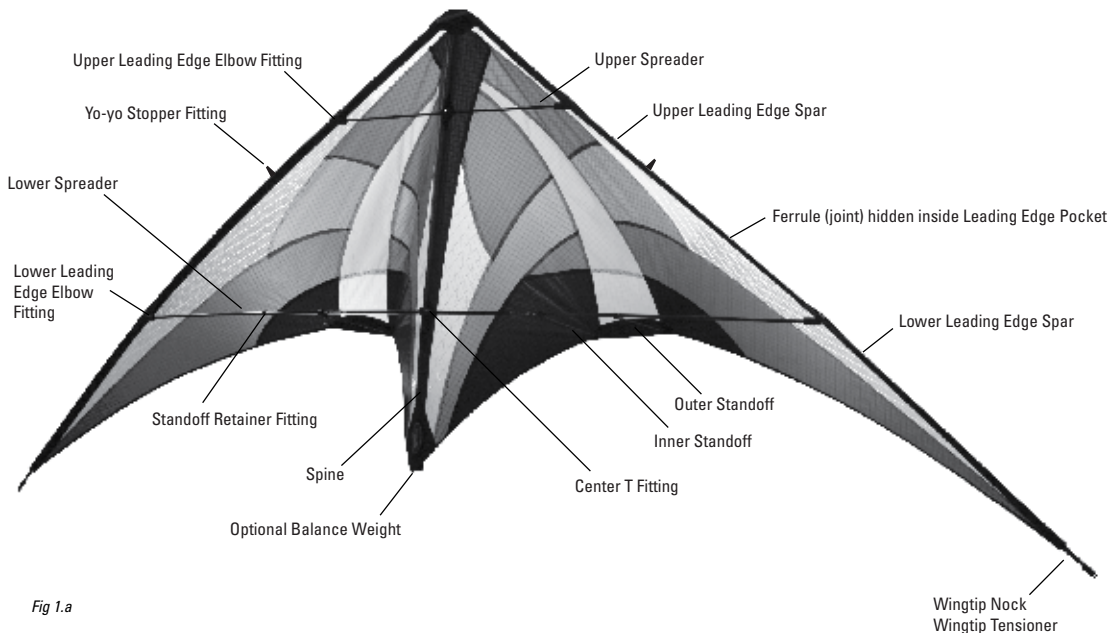


Fig 1.a

# KITE PARTS DETAIL

- 1. Upper/Lower Leading Edge Elbow
- 2. Standoff Retainer Fitting
- 3. Yo-Yo Stopper Fitting
- 4. Center T Fitting
- 5. Wingtip Nock
- 6. Sail Clip



Fig 2.a

## FRAME REPAIRS

### 1. Replacing a wing spar

Broken *leading edge* spars can result from a hard nose dive or pulling on the kite while a wingtip is stuck in the ground.

Most kites use two-piece *leading edges* with a connector, or *ferrule*, hidden inside the wing sleeve about halfway down the wing. *Ferrules* are usually glued to the upper half of the wing spar (*Internal Ferrule, Fig 3.a*). Some are hollow, providing a female socket for the lower rod. Others are designed to fit inside a thin-walled tube, with the mating section sliding over the *ferrule* (*External Ferrule, Fig 3.b*).



Fig 3.0



Fig 3.b

*Leading edge* rods will often break right at the *ferrule* because they create a weak point in the rod. The *ferrule* should project equally into (or onto) both rods being joined. If it is too short on one side it can cause premature breakage. Sometimes *ferrules* can come unglued and slip up inside the rod, leaving little or no *ferrule* sticking out to engage the other rod. If not discovered, this can cause you to break rods prematurely until you discover the problem. When you work on your kite or fold the wings for

storage, make a habit of checking that the *ferrules* in your *leading edge* rods are still glued firmly in place and that approximately 2-2.5" of the *ferrule* is exposed.

To replace a wing spar, flex the upper and *lower leading edge* rods to verify which one needs replacement. Disconnect the elastic or tensioning string at the wingtip to take tension off the sail along the *leading edge*. Next, grasp the *wingtip nock* and slide the *lower leading edge* rod out of the kite toward the wingtip, holding on to the *lower spreader elbow fitting* so you don't lose it.

If replacing a *lower leading edge*, simply slide the new rod back in the same way the old one came out, reconnecting the *elbow fitting* and bridle as you go to match the other side of the kite exactly (Fig 3.c).

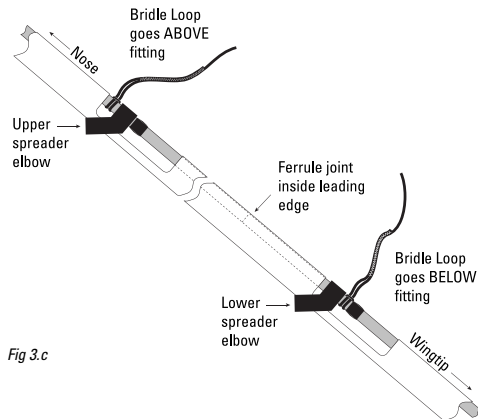


Fig 3.c

If replacing an upper *leading edge*, work the upper spar out of the nose and backwards towards the wingtip. Remove it through the sail cutout at the *lower spreader*. BE CAREFUL: The broken rod could leave splinters if you let your hand slide along it.

**TIP:** As the bridle and elbow fitting come off the upper *leading edge rod*, tie a slip knot in the upper bridle leg so you know which end of the bridle goes up as you're installing the new rod.

Replace the upper *leading edge* rod the same way it came out, through the *lower spreader* cutout. Be sure that the orientation of the *elbow fitting* and the bridle are exactly the same as you see on the other side of the kite. On most kites, the bridle goes around the *leading edge* rod above the *elbow fitting* (on the nose side of the fitting). But on a few kites such as the Quantum Pro, the bridle goes between the *elbow fitting* and the stop collar on the spar. So check the opposite side of the carefully to be sure you are re-assembling it symmetrically.

## 2. Replacing a spine

If you need to replace a broken *spine*, look closely at how the original is installed on the back of the sail before you remove it. Most *spines* are held by a velcro strap at the tail. Loosen the strap and slide the *spine* out from the tail, being careful to avoid splinters from the broken rod. Install the new rod by sliding it through the tail velcro, then the *Center T fitting*, then into the nose reinforcement. If your *spine* has caps or fittings on the ends, replace them before you finish the installation.

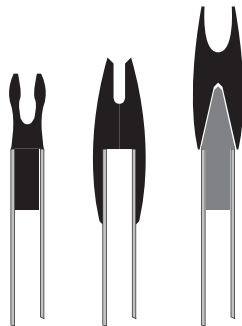
### NOTE:

Bridle goes *BELOW* upper spreader fitting for Quantum Pro

## 3. Replacing a wingtip nock

*Wingtip nocks* can break from banging into rocks or hard objects on the ground, releasing the tension on your *leading edge* that you'll notice as a big wrinkle at the *lower spreader* point. An assortment of *nock* styles and sizes is included in this kit and in most cases you can simply pull off a broken *nock* and press in a new one. If *nocks* are glued on, they can be carved off using the included knife.

One older *nock* style comes in two parts, a conical plug that glues into the wingtip and a *female nock* that glues onto the cone. If the *nock* breaks off, simply glue a new one onto the conical plug. If the plug itself breaks, you'll need to carefully drill it out using a size "B" or "C" drill bit, then replace with a more modern *single-piece nock*. Drilling out the plug is a little fussy but can be done with patience and a steady hand.



From Left to Right:  
Internal, External, and Insert Style Wingtip Nocks

Fig 3.d

#### 4. Improvising a nock

In a pinch, you can make a serviceable *nock* with a *standoff fitting*. Fit the *standoff* hole over the wingtip and then use a bit of bridle-sized line to tie off the wingtip.

#### 5. Gluing an internal Ferrule

Run a 1" long bead of glue (*kind of glue?*) along the *ferrule*, then twist rapidly back and forth to fully coat the *ferrule* with glue as you slide it halfway into the tube. The perfect amount of glue completely coats the *ferrule* without leaving any to drip out.

*Ferrule* loose but stuck in the tube? Drop your top spreader in from the other end and shake it up and down to knock the *ferrule* out.

#### 6. Fixing a cracked spreader

*Lower spreaders* can crack at the center T from a hard nose dive, or if they come partway apart in a crash and you don't notice it. To fix an *internally ferruled, wrapped* spreader such as a SkyShark, Dynamic, or GForce, take some thin string (Spectra flying line works best) and wrap it tightly around the rod for the full length of the split. Then rub Super Glue onto the string over its full length to create a hardened splint. Allow to dry fully before reinstalling if you don't want a permanently assembled kite!

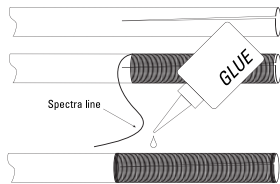


Fig 3.e

Another trick that works with non-tapered *lower spreaders* is to simply swap the female spreader end-for-end and insert the cracked end into the rubber *elbow fitting* and the strong end into the *center T Fitting*. Slide the *standoff fitting* as necessary so that the *standoff* is perpendicular to the spreader. Beware of splinters when handling the cracked end of any rod.

#### 7. Standoffs

*Standoffs* don't break very often but they're sometimes lost or break free from their fittings. Sometimes the **cap** on the back of a *standoff* can break off, causing it to disappear in a crash.

This kit includes an assortment of *standoff fittings* to fit most normal rod sizes and re-secure the thin *standoff* rod to the sail. In some cases the original sail fitting is glued together through the sail, so replacing might require carefully cutting off the original fitting. A pair of *diagonal cutting pliers* works well for this.

Also included are some *standoff retainer fittings* to connect the free end of the *standoff* to the *lower spreader*. Simply slide an appropriately-sized fitting onto the *lower spreader* to a position that holds the *standoff* roughly perpendicular to the spreader.

*Note: The Prism Nexus kite has slightly unusual standoffs designed to be slightly bowed when assembled. The standoffs act as shock-absorbing springs in a crash and prevent breakage while saving weight.*

#### 8. Heat shrink stop collars

On the *leading edge* rods of a stunt kite, stop collars are sometimes used to keep the upper and lower connector elbows from sliding out of position in a crash. Some manufacturers



use plastic “C” shaped clip glued in place on the rod and these frequently break loose. At Prism we use a short section of heat-shrink tubing to accomplish the same thing. The tubing has a layer of hot-melt adhesive that glues the collar to the rod as it shrinks, providing a very strong bond that seldom breaks loose.

If a stop collar comes loose, the spreader can slide out of position and affect the kite’s performance. Most commonly, this happens at the *upper spreader* fittings, causing the top spreader to slide down away from the nose. This will make the kite sluggish and it may turn more easily in one direction than the other.

We include some heat-shrink collars in the repair kit in case you need to replace one. They are also useful for other improvised repairs such as increasing the diameter of a rod so it fits more tightly into a *leading edge elbow fitting*.

*CAUTION: To use heat-shrink stops you must heat them with a heat gun or lighter until the collar shrinks and the adhesive melts. Carbon and fiberglass rods are SERIOUSLY weakened when hot, so be sure there is NO load on the rod while you apply the stop, and make sure it is completely cooled before you move or flex the rod.*

To glue a stop in place, slide it over the rod into position, then use a heat gun (preferred) or lighter to slowly and evenly heat the stop until it shrinks and you see glue bubble out the from the edges. DO NOT OVERHEAT or you will damage the spar. Again, be sure the rod is completely cool to the touch before you put any load on it.

## 9. Spreader coming loose

Spreader keeps popping out? Give it a tighter fit into the *elbow fitting* with a **heat-shrink stop 1/4”** from the end of the spreader.

## 10. Cutting spars

Carbon and fiberglass rods can be cut cleanly with a thin abrasive disk on a motorized Dremel tool, or if you’re in the field a fine-toothed hacksaw blade will work. Rotate the rod as you cut to prevent splitting, then use a bit of sandpaper or even a rock to round off the sharp edges at the cut end.

## SAIL REPAIRS

### 1. Sail tears

Most puncture wounds and tears can be fixed using our transparent Tedlar tape to provide a repair that’s almost invisible from the front of the kite. Tedlar is a high-tech clear film that won’t yellow or crack from UV exposure over time. It has an incredibly aggressive adhesive on one side that will permanently adhere to your sail. By applying the **Tedlar to the back surface of your sail (it’s plenty strong for this), your repair will be almost invisible** from the front side.

We recommend Tedlar for tears as long as 10” in the middle of the sail. These can occur from any number of calamities including dogs, barnacles, cactuses, and kite-eating trees. It is not usually cost effective to sew a new cloth panel into a sail.

If your sail is truly mangled beyond repair (bad dog!), give us a call and we’ll try to help. Often we can locate a previously flown or slightly blemished sail we can sell at a healthy discount to get you back in the air.

### To fix a tear with Tedlar:

1. Use a little rubbing alcohol to clean the back side of the sail in the repair area.
2. If available, use some masking tape on the **FRONT of the sail** to align the torn edges and close up the tear.
3. Cut a Tedlar patch that extends at least 1" around the perimeter of the tear. Round the corners to keep them from peeling up.
4. Apply the patch smoothly to the back side of the sail, then remove the masking tape from the front.

That's it! Your patch will be noticeable as a shiny spot from the back side of the sail, but from the front it should be close to invisible.

### 2. Mylar tears

Many Prism kites have clear wing panels made from transparent Mylar laminated over polyester reinforcement fibers. We incorporate Mylar panels in places where we want less stretch in the sail to control the airfoil shape or reinforce a stressed area. Mylar tears are easy to fix with Tedlar and invisible when complete. Simply follow the same procedure above for cloth panels, and if the tear is in a high-stress area stick a second patch on the front side of the sail just for good measure.

If you fly a lot in fine sand, Tedlar can attract sand around the edges of the patch, but it can be easily cleaned with a little alcohol on a rag.

### 3. Leading edge sleeve tears

This can happen from dragging the *leading edge* of your kite across sharp rocks or barnacles, or from repeated stress at the midpoint where the wing folds in half.

*Leading edge* tears are purely cosmetic; they won't affect the flight of your kite or cause other collateral failures. But we include some black, adhesive-backed reinforcement material so you can make an almost invisible repair without having to sew.

To patch a *leading edge* tear, simply cut an appropriately-sized patch from the black reinforcement material provided and stick it on after cleaning off any sand or dirt. To keep the corners from peeling up, round them slightly with scissors before you apply the patch.

### 4. Nose punch-through

Nose failures on Prism kites are rare because we internally reinforce them with Kevlar to prevent punch-through. But on other brands the nose is a common weak point, vulnerable to repeated crashes and abrasive surfaces such as hard sand and cement. If you find a *spine or leading edge* rod poking through your nose, the best solution is to send in the sail to have a new nose sewn on. But if you just need to keep it in the air, here are a few temporary fixes that can work:

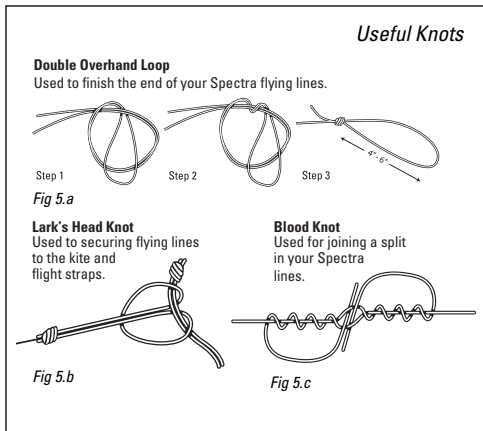
- Add an endcap or two to the end of the rod to make it bigger so it can't fit through the hole.
- Use a needle and thread to sew the hole closed, then soak the reinforcement material in Super Glue.
- Smear Shoe Goo from the hardware store on the nose and let it dry before re-inserting the rod. Not pretty, but it can work.

## FLYING LINES AND STRING

### 1. Keeping tangle-free

High-performance Spectra flying lines are expensive so it's good to know a few tricks to keep them tangle-free and fix them if they break.

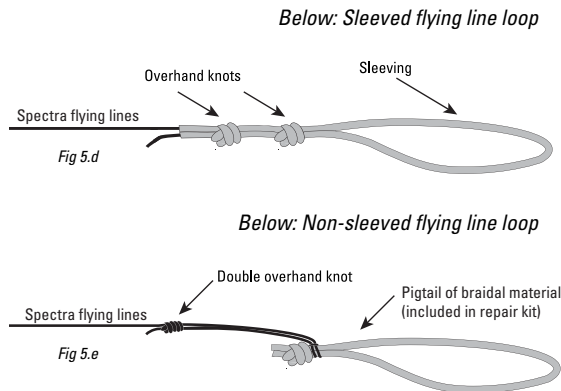
To prevent tangles, always leave your lines fully stretched out when your kite is on the ground. Use a stake through the handles if necessary to keep the kite from blowing away. NEVER walk around with your handles and drag the lines across the ground. If you need to walk to your kite, put the handles on the ground before you walk and you'll never need to untangle a lineset.



### 2. Terminating your flying lines

The loops at the end of Spectra lines are often protected with a braided sleeve (*fig 5.d*). The sleeving cushions the knot in the loop, making a sleeved lineset about 20% stronger than an unsleeved one. Sleeving also protects your line from abrasion for a longer-lasting lineset.

It's not strictly necessary to sleeve your lines. A simple double-overhand loop tied to a loop of bridle line (for chafe protection) makes a perfectly functional termination for lines that won't be flown completely maxed out (*fig. 5.e*). This is also the quickest way to put new loops in the end of your line when you're in a hurry on the field.



### 3. Sleeving a lineset

To make sleeved loops in your lines using the supplied QuickSleeves:

1. Hook the intact loop ends over something fixed (hook, fence-post, log) and stretch both lines out to their full length.
2. Cut both lines to the same length with a knife, removing the loop on the unbroken side.
3. Use the thin wire loop inside the QuickSleeves to fish each line through the hollow sleeving. Slide the sleeving off onto each line.

4. With tension on both lines, slide the sleeving to the same position on each side.

5. Holding even tension on both lines, use a permanent marker to put a tic mark across both lines about 1" beyond either end of the sleeving.

6. Fold each line so the tic marks match up, and use two overhand knots in a row to tie loops in the lines and sleeving.

7. Pull evenly on both lines to check that they are the same length within 1/2". Loosen knots and adjust one loop if necessary.

8. Cut off the loose Spectra tail on each loop.

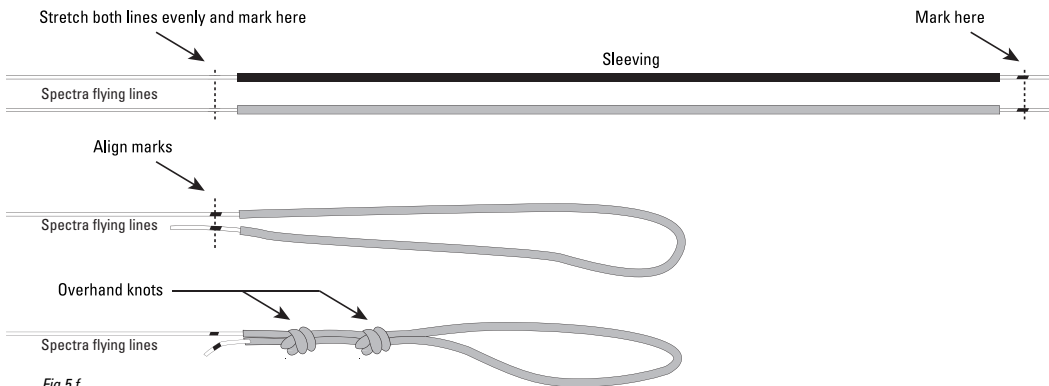


Fig 5.f

### 3. Fixing a lineset without sleeving

To fix a lineset broken close to the end without sleeving (see Fig 5.f and Fig 5.g):

1. Hook the intact loop ends over something fixed (hook, fence-post, ltog) and stretch both lines out to their full length.
2. With even tension on both lines, use a permanent marker to make two tic marks across both lines. Make the first mark about a foot from the end of the shorter line, and a second tic mark near the end of that same shorter line.

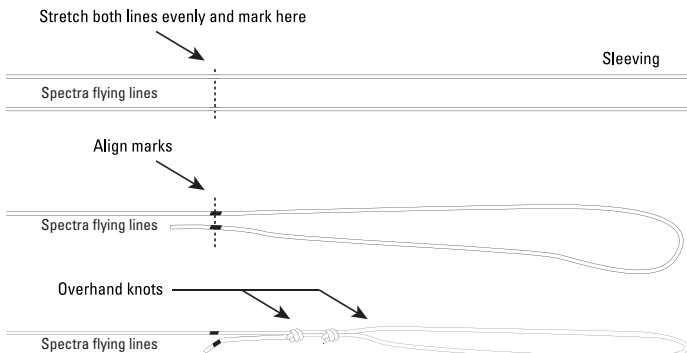


Fig 5.f

3. Fold each line exactly at the tic mark and tie a 4-5" loop with a double overhand knot in each line. Cut off the excess line.
4. Tie the two Spectra loops to the two included loops of bridle line with a Lark's Head knot. Or use some bridle-weight line to make your own loops using an overhead knot (see fig 3.d).
5. Pull evenly on both lines to check that they are the same length within 1/2".

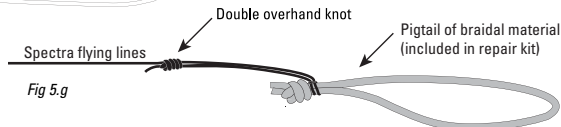


Fig 5.g

## 5. Replacing elastic wingtip tensioners

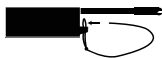
Replacing your elastic wingtip tensioners with string allows you to put more tension on the sail and improves performance, especially in stronger winds. It's also handy if you break an elastic tensioner and need a quick repair.

Any string approximately the size of your bridle lines will work for the purpose. If you have a lighter handy, melt the ends with the flame to keep them from fraying.

1. Tie the string tensioner into the webbing strap with a Lark's Head knot.



Fig 5.h



2. Pass the free end around the wingtip nock and back through the loop to form a pulley.



Fig 5.i



3. Tension the wing, pass the around the wingtip nock once more, then tie off around the spar with two half hitches. Pull the sail tight enough to just remove wrinkles along the *leading edge*.



Fig 5.j



## CARE AND FEEDING

The materials in your kite are durable and designed for a long life with minimal maintenance.

### Here are few tips to keep it healthy:

Give your kite a pre-flight inspection before you launch to be sure everything is properly assembled, your frame is intact, and your bridle and lines aren't worn. Keep the sail out of the sun when not in use to keep the colors from fading. Beach sand is abrasive and will wear on bridles and fittings, so do what you can to dust off the sand after a session at the beach. Compressed air works great for this if it's available, and a freshwater rinse is a good idea if your kite has been swimming in salt water. Keep your kite out of hot car trunks and avoid using solvents to clean the sail as they can dissolve the adhesives in the seams.

To fold up your kite the way we do at the factory, disconnect the upper and *lower leading edges* at the joints and fold the wings in half. Then fold the *leading edges* against the *spine* so all the spars are next to each other. Tuck the *standoffs* into the sail and roll the sail neatly up to (but not around) the bundle of leading edges and *spine*. Try to avoid wrinkles as you fold as they break down the coatings in the sail and cause it to stretch out.



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***CAUTION!*** NEVER FLY NEAR:



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POWER LINES



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