

Eddy Kite Dan's Version

This kite was developed in Malaysia many years ago. Our kite is a modified version for easy construction and good performance. It is simple to make, yet flies very well in various wind conditions.

As always, I weighed all the materials and calculated the surface area, etcetera, before I started work on the first one. The question at hand was: how to make the kite easy enough for a young child to put together. The biggest problem for children seems to be the bridle point, so I decided to give this kite only one. This was done by moving the bridle point a few millimetres up or down on the kite. I took the best point, then I figured that if the crossing point and the bridle point were at the same place, the kite would be easier to assemble. With some difficulty, six kites on which the cross point was moved up a centimetre (i.e the cross point was at 100 mm, then at 110, then at 120, etc). I found that the kite shown on the right has the best performance.

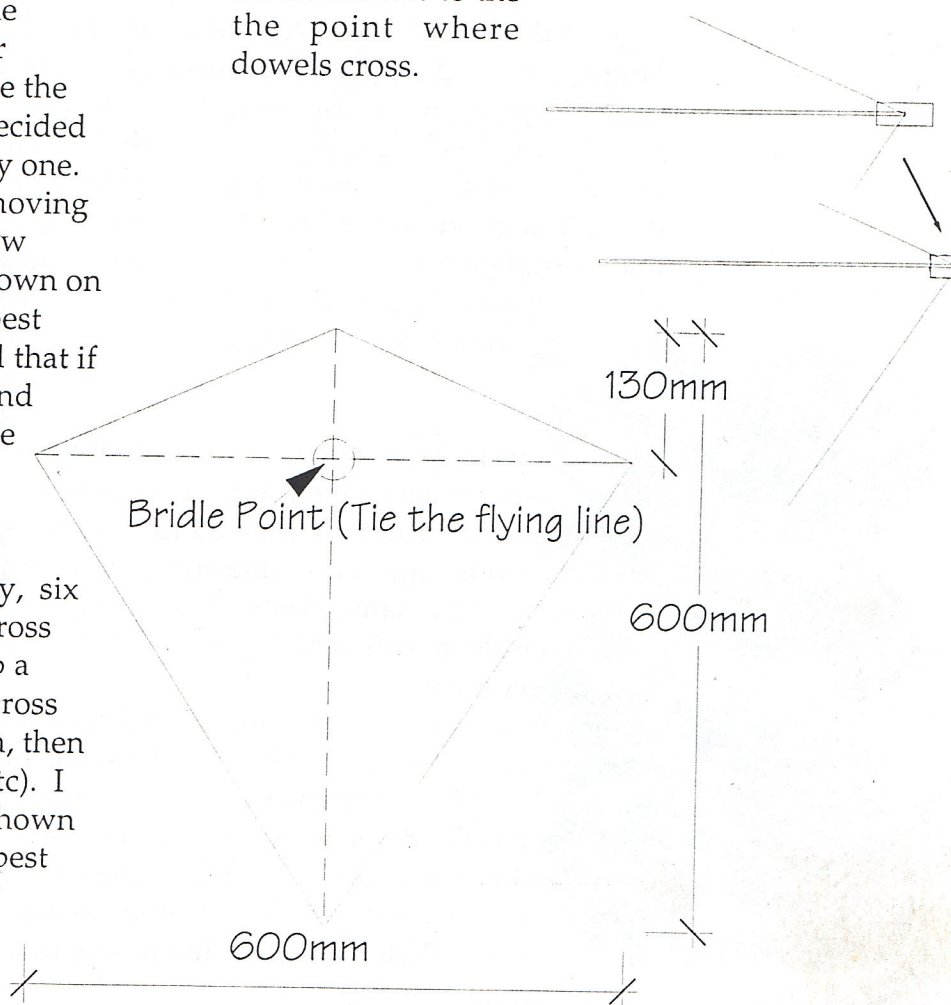
The Malay kite was modified by William Eddy who bowed the spar for better flying characteristics. The new version was named after him.

Material

- 2 600mm long 3mm diameter dowel or equivalent
- 1 Cover made of plastic, cut to diagram
- 6 50mm long 20mm wide filament tape
- 1 Tail material, 25mm x 1000mm scrap plastic will do

Assemble

- 1. Spread cover on flat surface.
- 2. Locate dowel on dotted lines.
- 3. Tape ends of the dowels to face using 50mm long tape, wrap around to cover the end of the dowels.
- 4. Decorate kite with felt tip pens, if you wish. Tape tail on
- 5. Tie bridle line to the the point where dowels cross.



Invader

This kite was created soon after the Lee Toy Bird was done. I put two holes on the Lee Toy, then gave it a square bottom, but it did not fly as well as expected, so I tried slitting the bottom. Due to high drag, I had to lower the bridle point.

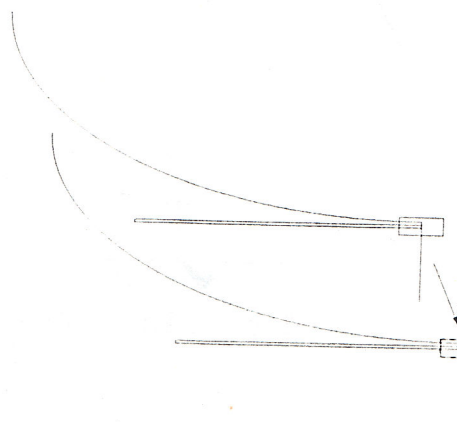
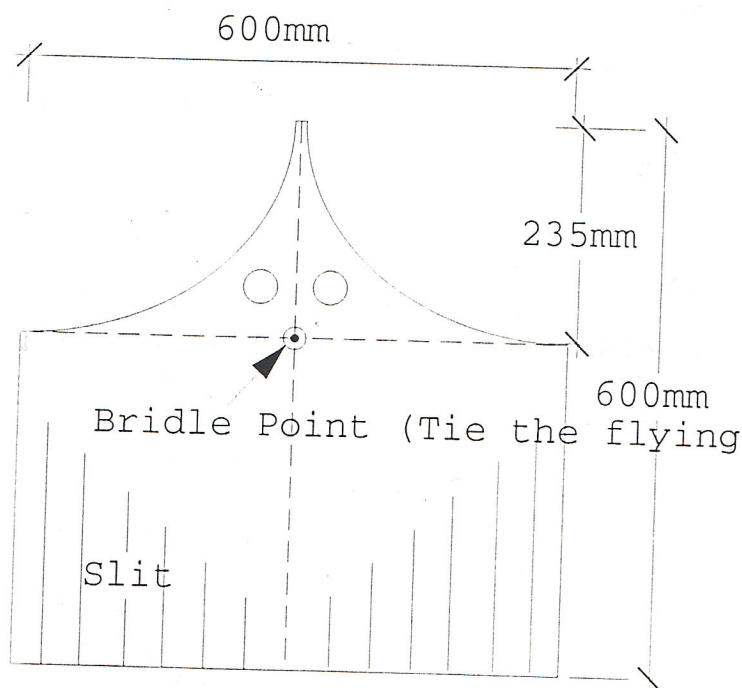
This kite is a modified versions of the Lee Toy Bird. However it looks and behaves very differently. It kite does not require a tail because the slits create enough drag which acts like a tail. Therefore, this kite is a little bit more efficient for light wind. If the wind is so light that EDDY (Page 42) or Lee Toy Bird (Page 43) do not fly, try this one made of High Density plastic or light Mylar.

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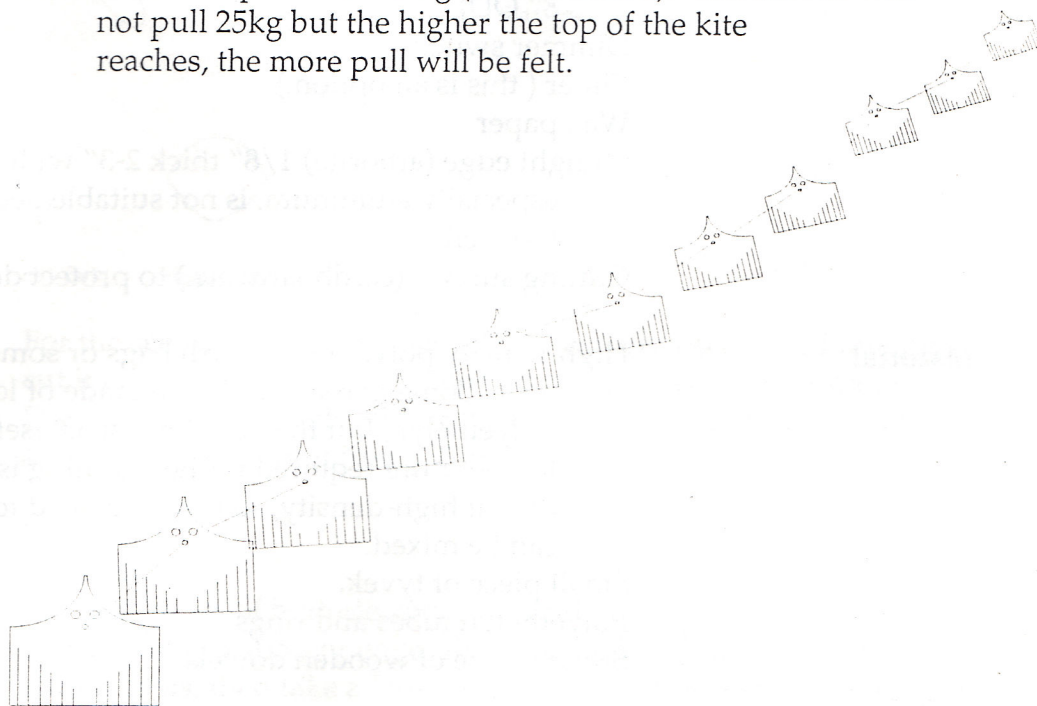


Making them to Kite train

I like kite trains. They are fun kites to fly and in spite of what many people think, they are easier to fly. Even when there is very little wind, if you make it light enough, a train will fly even when all other kites fall in love with the ground.

Some cautions and methods I use when building kitetrains.

1. Swivels are needed on the top four or five kites because they do not have kites above to give enough pull to stabilize them. Choose the best-made and balanced kites from the many you have made.
2. You need to change flying lines about every 10 to 20 kites depending the size of each segment.
3. Consider about 5kg of pull for each square meter of kite surface. This includes about 2X~3X safety factor depending on the size of the kite and is easy to calculate.
4. After so many kites, think of large enough line thickness rather than the strength of the flying line since you have to hang on to it.
5. I usually keep the train under 100 segments, unless there are specific reasons for a longer train.
6. Lee Toy Bird Dan Kurahashi's version, Eddy Dan Kurahashi's version and the Invader are trains ready as well as Arch ready. All of these kites are about .25 square meters so figure that 4 of them will pull about 5 kg (about 10LBS). The first 20 will not pull 25kg but the higher the top of the kite reaches, the more pull will be felt.



Sail : Polythene, *Tyvek*
 Spars : Spine 6.3 mm ($\frac{1}{4}$ inch) dowel 61 cm (24 inches) long;
 spreader, 6.3 mm dowel approximately 57 cm (22½ inches) long;
 wing spars 2 pieces 5 mm ($\frac{3}{16}$ inch) 62 cm (25 inches) long

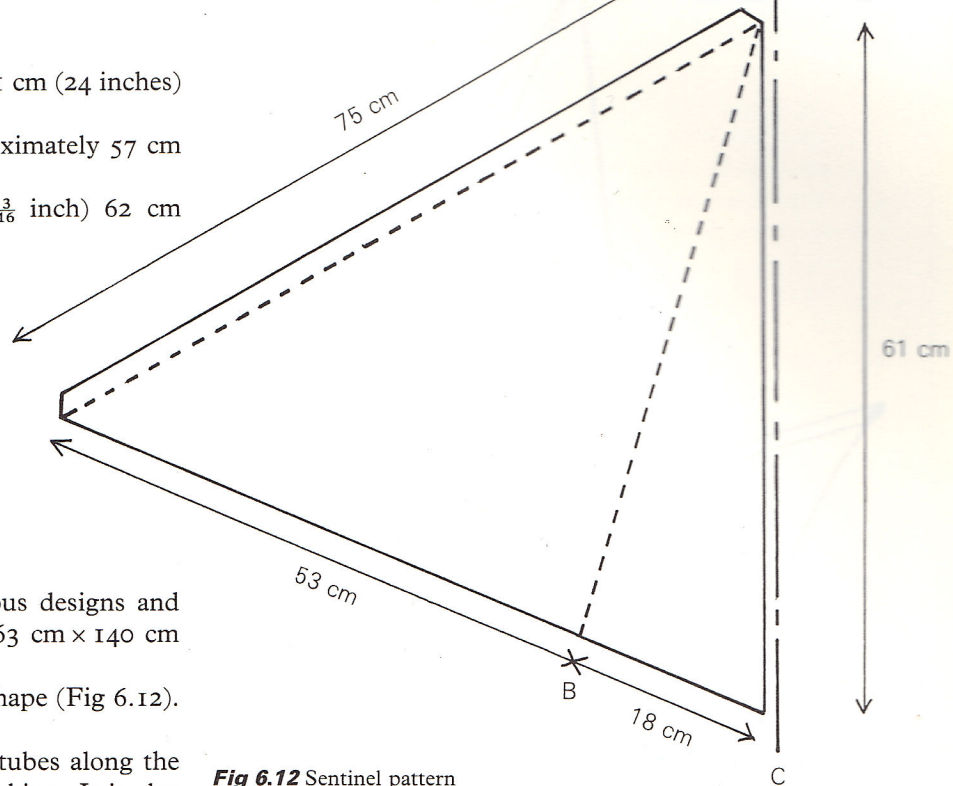


Fig 6.12 Sentinel pattern

The Sentinel is much larger than previous designs and requires a piece of sail material at least 63 cm × 140 cm (25 inches × 55 inches)

Fold the sail material and cut out the shape (Fig 6.12). Mark the lines AB on both sides.

Lay the sail out flat and make narrow tubes along the wing edges to house the spars as previous kites. It is also convenient at this stage to fit the spine along the centre line, giving the sail a slight tension as you do so, although don't worry too much about reinforcing just yet (Fig 6.13).

Refold the sail material along the centre line AC and fold and make creases along the lines AB on both sides. Now join

Slightly tension the sail as you tape the spine

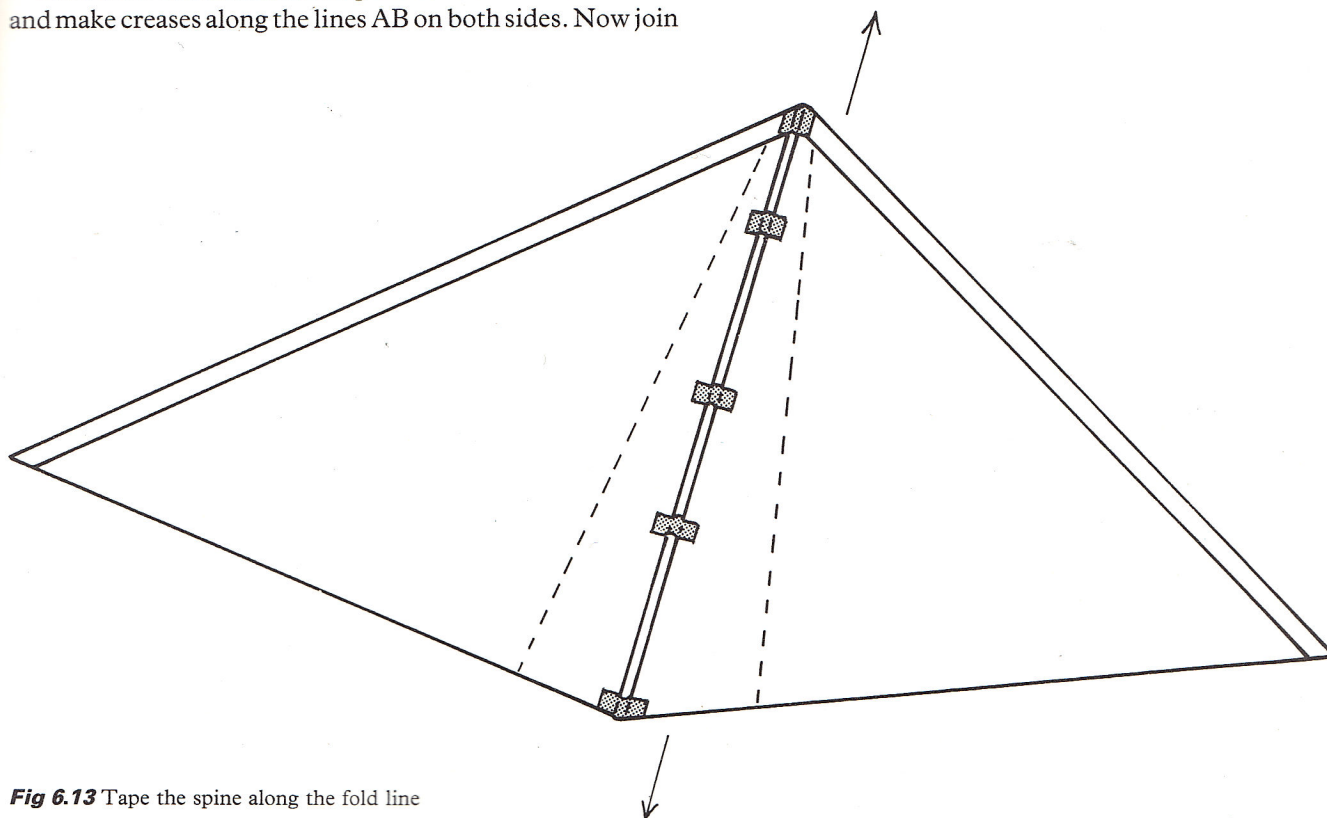
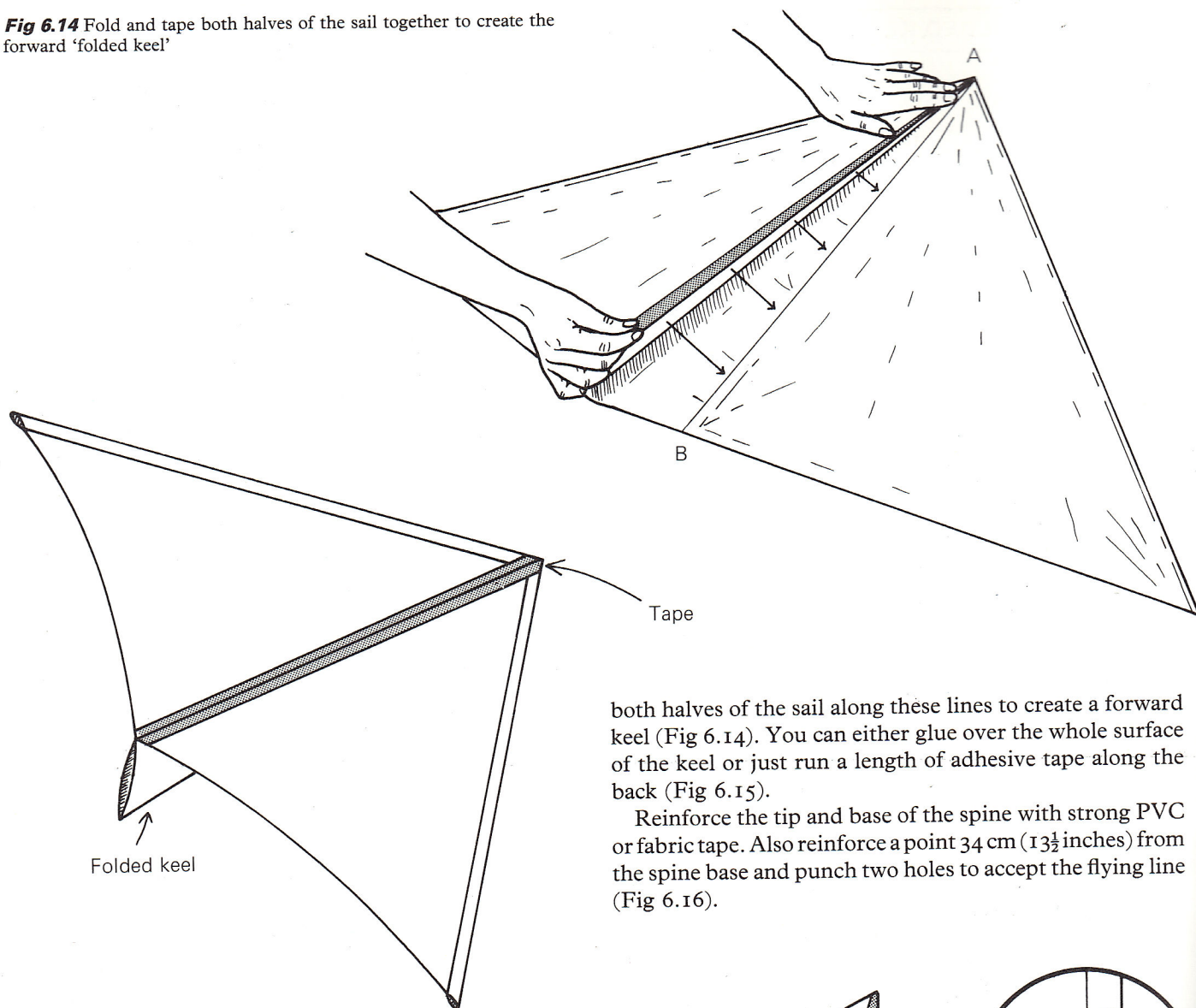


Fig 6.13 Tape the spine along the fold line

Fig 6.14 Fold and tape both halves of the sail together to create the forward 'folded keel'



both halves of the sail along these lines to create a forward keel (Fig 6.14). You can either glue over the whole surface of the keel or just run a length of adhesive tape along the back (Fig 6.15).

Reinforce the tip and base of the spine with strong PVC or fabric tape. Also reinforce a point 34 cm (13½ inches) from the spine base and punch two holes to accept the flying line (Fig 6.16).

Fig 6.15 Also tape along the rear of the junction

Reinforce the spine tip and base and the wing tips

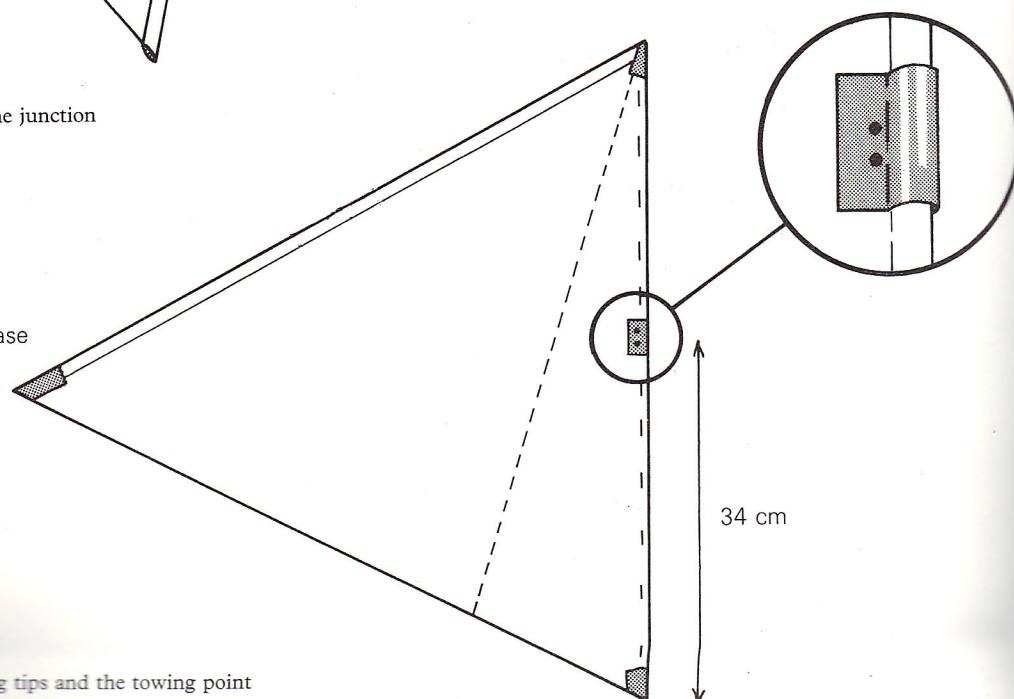


Fig 6.16 Reinforce the spine and wing tips and the towing point

spreader bar (Fig 6.17).

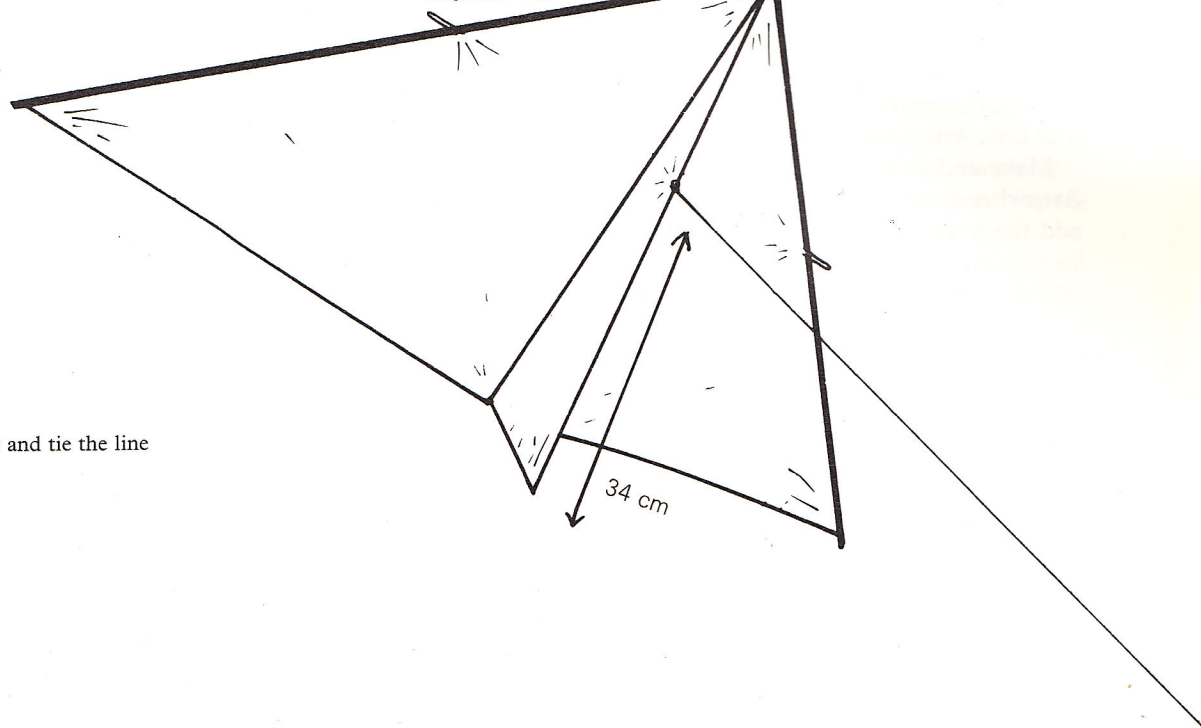


Fig 6.17 Add the spreader bar and tie the line

FRINGE DELTA

Sail : Polythene
 Spars : Spine 6.3 mm ($\frac{1}{4}$ inch) dowel 55 cm ($21\frac{1}{2}$ inches) long;
 spreader, 6.3 mm dowel approx 56 cm (22 inches) long;
 wing spars 2 pieces 5 mm ($\frac{3}{16}$ inch) dowel 68 cm ($26\frac{3}{4}$ inches) long

The Fringe Delta is a superb poly-bag kite which has been very successful in workshops.

Fold the sail material and cut out the pattern shown in Fig 6.18 to create the symmetrical shape.

Cut out the keel from one of the scrap pieces and reinforce

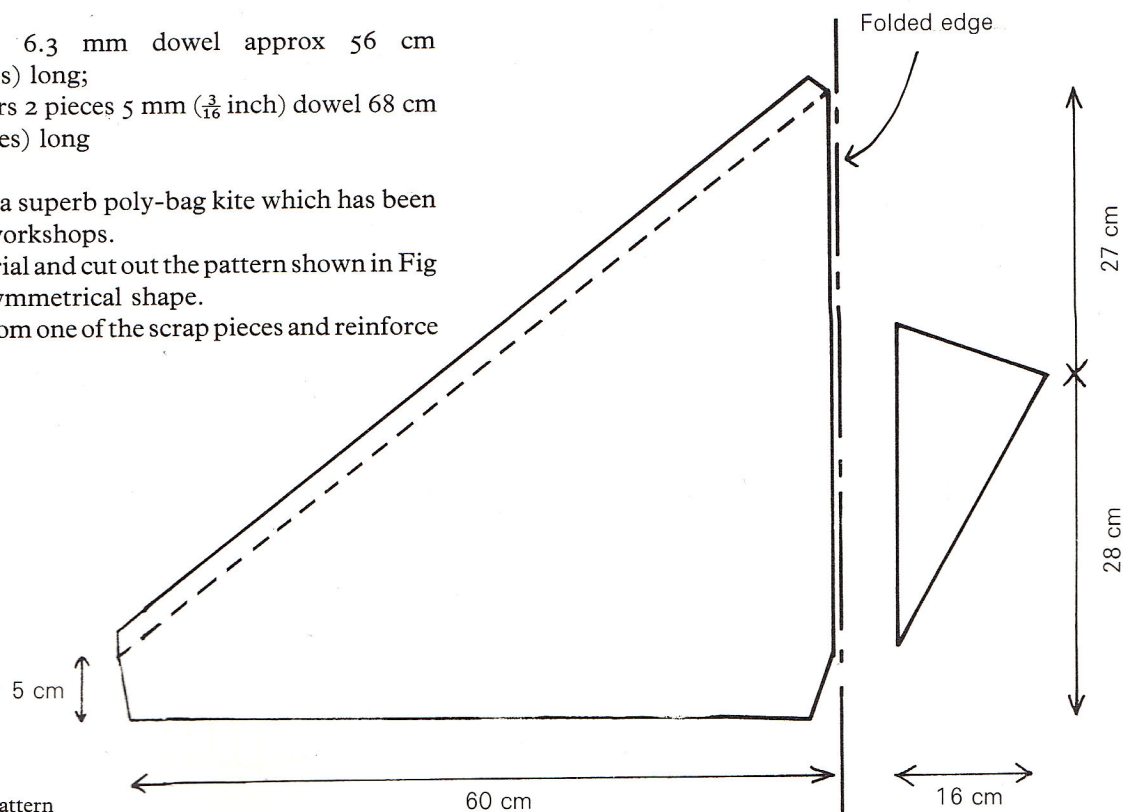


Fig 6.18 Fringe Delta pattern

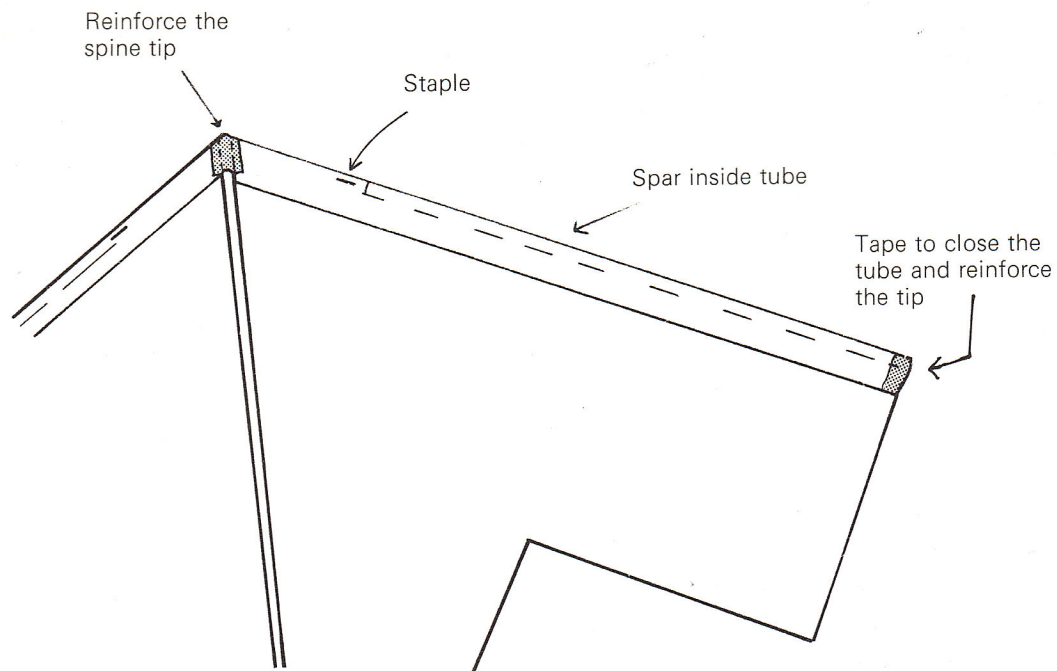


Fig 6.9 Staple the tube at the upper end of the spar and reinforce the tip

Attach the spreader with this method (arrow head delta):

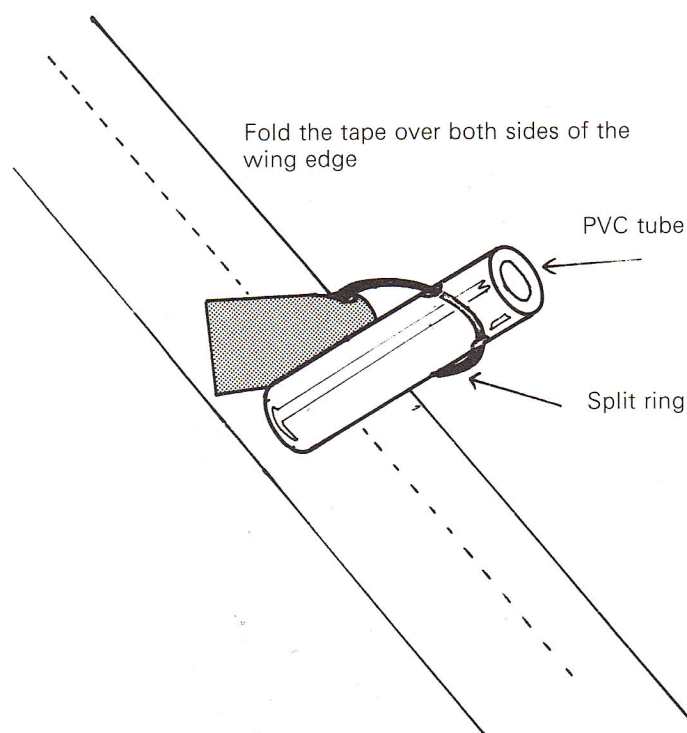


Fig 6.10 Spreader connections

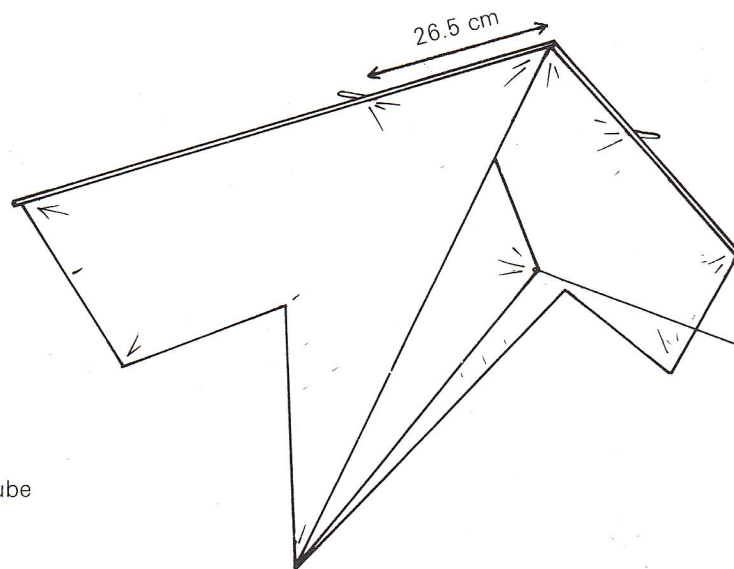


Fig 6.11 Add the spreader bar and tie the line to the keel tip

The Arrowhead introduces a second, much stronger method of securing the spreader bar to the leading edges. Thread a split ring through a hole punched towards the end of short length of 6.3 mm ($\frac{1}{4}$ inch) diameter PVC tube and tape it to the wing edges 26.5 cm ($10\frac{1}{2}$ inches) from the spine tip (Fig 6.10).

Finally, fit the spreader bar across the back of the kite, each end fixed into the PVC connections (Fig 6.11). If the kite has been cut and made correctly, the wings will hang at an angle of about 160 degrees.