

RAM JET DELTA

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I should like to introduce an update on my Ram Delta design first published in KDN July 1982.

Although based on the same principles the design that follows is for a smaller version and has a form of tail piece. Nominally 2 metres wingspan the construction is similar to that described previously save that the piece for the tail is applied to the underside and tacked into position together with the wing and double ram piece all folded in half. Of course the tail piece must be hemmed or cased first. Also the leading, trailing edges of the double ram and the snub nose part of the wing.

For myself I prefer the casings for most of my edges because I find it easier to sew them and it is convenient to adjust the size, if required to sleeve a stick.

Now for a few general words of advice in view of news that some fliers have had trouble in making up the Ram Delta.

1. The wing spreaders are fitted UNDERNEATH the wings and must be a sprung in fit to suit your own kite as made. Cut each spreader to an ample length and carefully nibble back each spreader always trying both in position until you can just spring them into the joint.

2. The dihedral joints should be of stiff plastic. I obtained mine from Cochranes of Oxford in two sizes to take 4mm and 6mm sticks. These joints come with a central hole for the spine and are ideal. These dihedral joints must have a cut out through the spine sleeve and the stitching lines must be kept far enough apart to allow for this. Later when fitting the longeron stick the layers of nylon must be teased apart to allow the stick to pass through the sleeve and the hole in the dihedral joint. This fiddly job will only have to be done once because the spine stick will remain in situ when the kite is rolled up.

3. The piece for the double ram must be cut to allow for some fullness (about 50mm each side) to allow it to inflate, but the top ram is cut flat to size and it will obtain its fullness by the effect of the dihedral when assembled.

4. Both rams should overlap the snub nose of the delta, the double ram by about 40mm and the top ram by about 25mm more in order to catch the wind and inflate. Both pieces should have casings fitted to the leading edges and these will result in five thicknesses of material double sewn to stiffen the edge and avoid any need for cane stiffening.

5. Although the original design for the 3 metre kite showed a possible bridle it has been found that it is not required and the line should be attached at any point between the nose and the dihedral joint depending on the wind strength.

6. This design has proved to be most accommodating in that whilst it is most delightful flying at minimal wind speeds of about 2 mph, just playing the thermals perhaps, it will continue to fly in winds of 25 mph when the line is rigged on the nose. But remember the golden rule of aero designers "Simplificate and add lightness".

7. Finally the drawing is not a step by step instructional plan and if anyone wanting to make up this kite has need of clarification on any point I should be happy to advise on receipt of S.A.E. or ring 0480 - 215053.

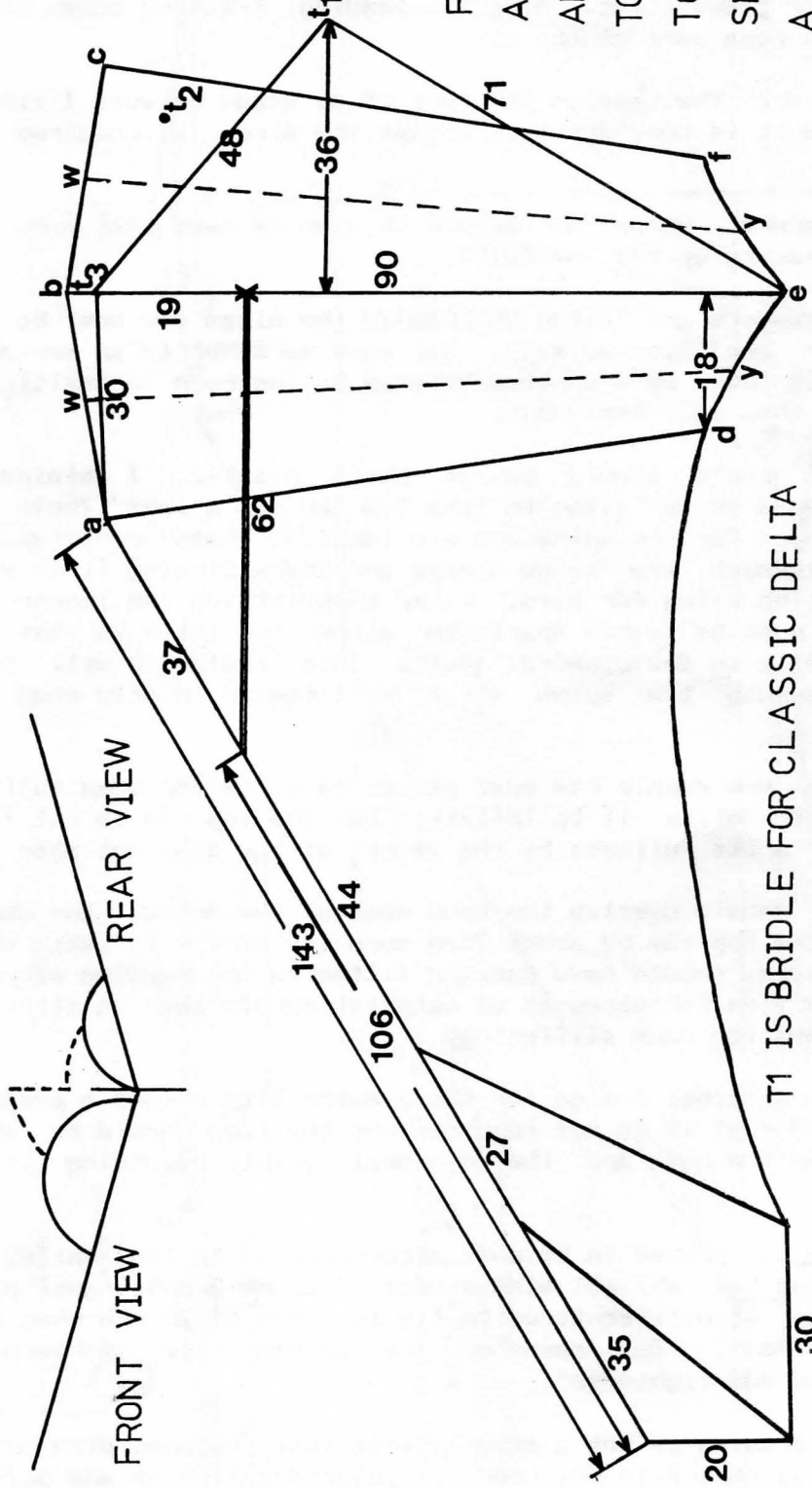
DIMENSIONS TO SEWING LINES

- A-C 70cm
- D-F 42cm
- W-W 28cm
- Y-Y 18cm

2 LEG BRIDLE
T1 (FOR ZEPHYUS)

FLAT SHAPES SIZE AS ABOVE ARE HEMMED AND SEWN DOWN A'D,C'F TO FORM RAMS SEWN TO THE BACK OF THE SNUB NOSE DELTA. A DIHEDRAL JOINT IS FITTED AT X AND RAMS INFLATE UNDER EFFECT OF SPARS

DOTTED LINES INDICATE A TRIPLE RAM DELTA



T1 IS BRIDLE FOR CLASSIC DELTA

USE T2 OR T3

USE 1/4" DOWEL

1/8" DOWEL BATTENS

IN SLEEVES ON

BACK

RAM JET DELTA

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(For those of you who have not seen the issue in question where the original article was published we reproduce it below.)

The sketch opposite gives the dimensions of a new variation of the delta theme and one with some very unique characteristics. It flies well in a variety of wind speeds, it is unaffected by ground turbulence and, remarkably, it does not need a bridle or keel.

Construction is fairly straightforward. The material for the ram was cut out with adequate hemming allowances and folded into the centre of the length of ripstop required for the wing shape, then sewn down the middle to form a sleeve for the longeron.

From this accurately sewn line all measurements are carefully made for the wing shape and the piece forming the double ram. The wings are cut out whilst folded in half so as to ensure a balanced outline. No hemming allowance is made on the leading and trailing edges of the wing, instead these were bound with casings sewn on and were of adequate size on the leading edge to take the 1/4" leading edge spar.

These spars were inserted through slits formed in the wingtip ends of the casings and the slits were closed by small flaps of velcro sewn to the outer edges of the casing.

Sleeves for 1/8" dowel battens are formed on the back of the wingtips in order to maintain the hang-glider shape of the wings as shown, but make sure the sleeves and battens are assembled complete before the casings are sewn on, so that the latter act as closures for the batten sleeves.

A velcro closure flap is provided for the tail end of the longeron sleeve and at the other end I sew my favourite device for a spar pocket - a plastic cap from a dried up felt tip pen. A V of stitches is made in the end of a sleeve or pocket, and the cap inserted so as to be a firm fit and the spar is shaped on the end to suit. In this way the strain is taken on the stitching rather than a point contact on the end through the material of the pocket.

A dihedral 3 way joint is worked onto the longeron in the way of an aperture cut in its sleeve and the wing spreaders, port and starboard, are cut to be a gentle "sprung in" fit UNDER the wings which are thereby allowed to billow naturally into an aerofoil shape.

The three ram jets provide strong directional stability and, I believe, contribute to aerofoil lift. Fly from a single line attached to the nose at T1.

Ted Fleming