Issue 30 — January 1987 Graduated Span Delta Conyne Triple Stack — Allan Davies

This design is a variation on a constant span Delta-Conyne stack built by Norman King (MKF) that I saw in flight at Derby earlier this year. I was very taken with the concept, but noted that although Norman had made each of the 5 pairs of wings in his stack a different colour, these colours were not as visible as they might have been in flight. To get round this I came up with the present design—you can see a portion of each wing in flight, thus different colours can be used for each 'level' of the wing to stunning effect!

The kite is, in effect, three Delta-Conynes one on top of the other. For the top two elements the middle cell panels which would normally form the characteristic 'V' shape are opened out vertically and attached to the cell beneath. The bottom element ha the normal cell configuration.

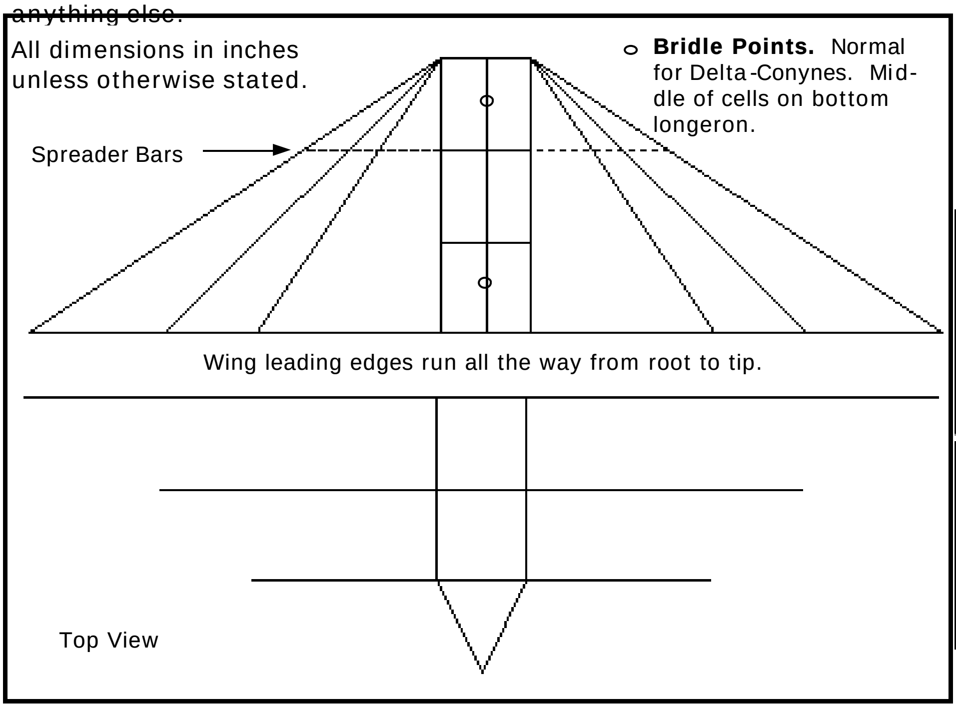
Since there is no vertical bracing in the kite at all, it relies on the airflow between the elements to keep the stack open. This makes for a medium to high wind flier in constant span stacks. This design has a high average aspect ratio so it will fly in reasonably light winds, providing a constant air flow through the kite is maintained. If you fly it in gusty conditions you will find that the stack has a tendency to collapse with a consequent drastic loss of lift! This can make for exciting or frustrating flying, depending on your point of view.

Construction is quite straight forward. I used 3 alternating colours on wings and centre panels, which necessitated cutting out separate centre panels. You could use a single colour for the vertical centre elements and bottom 'V' and cut front and back panels as a single piece, with sufficient hemming allowance to allow longerons to be inserted at each level. I think it is probably best to have these <u>inside</u> the verticals. Do it in the way that seems simplest to you.

The use of fibre-glass in the leading edges lends the kite a very sprightly performance since they flex quite appreciably in flight—you could substitute dowel for a more stately effect.

The spreader bars for the wings go above the wing, as on a single kite, and are positioned as indicated by the dotted line. There must be dozens of methods of attaching the spreader to the leading edge of the wing … Here is another! I put an eyelet just behind the leading edge and loosely tie a short length of polythene tubing (with the appropriate internal diameter) in place with line threaded through the tubing and eyelet. Fitting the spreader simply involves pushing the pieces of tubing on to each end. I find that this method has several advantages: it is simple; makes adjustment of the spreader bar length very simple; and it is a very loose joint allowing maximum wing movement. Another advantage is that if the kite is caught by a sudden gust the chances are that the line holding the tube will break before the spreader bar so that you can reel the kite in (or retrieve it from where ever it fell), tie the fixing back on again, adjust the bridle and fly away.

Although the kite will fly without additional stabilising it is a bit of a handful. I have added 2 x 1/2" streamers to each wing tip, the same length as the leading edge, which gives a very pleasing visual effect apart from anything else.



Max Span	78"
Min Span	36"
Chord	18"
Surface Area	13 sq ft

Wing Dimensions		
Top	36 x 12	Cut 2
Middle	24 x 18	Cut 2
Bottom	15 x 18	Cut 2

Spars Etc	
Wing Leading Edge	4mm fibreglass rod
Longerons	¼" dowel
Spreaders	¼" dowel

Hem all Edges!
Minimum Recommended line—150lb
Minimum wind speed—18mph (steady)