

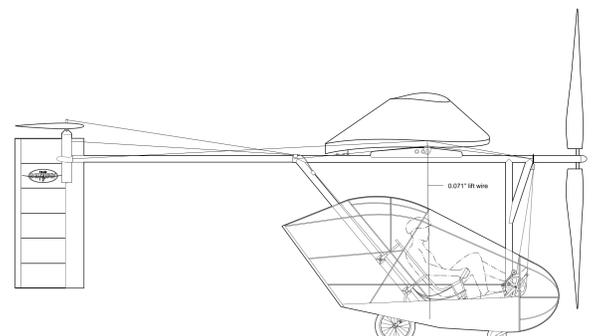
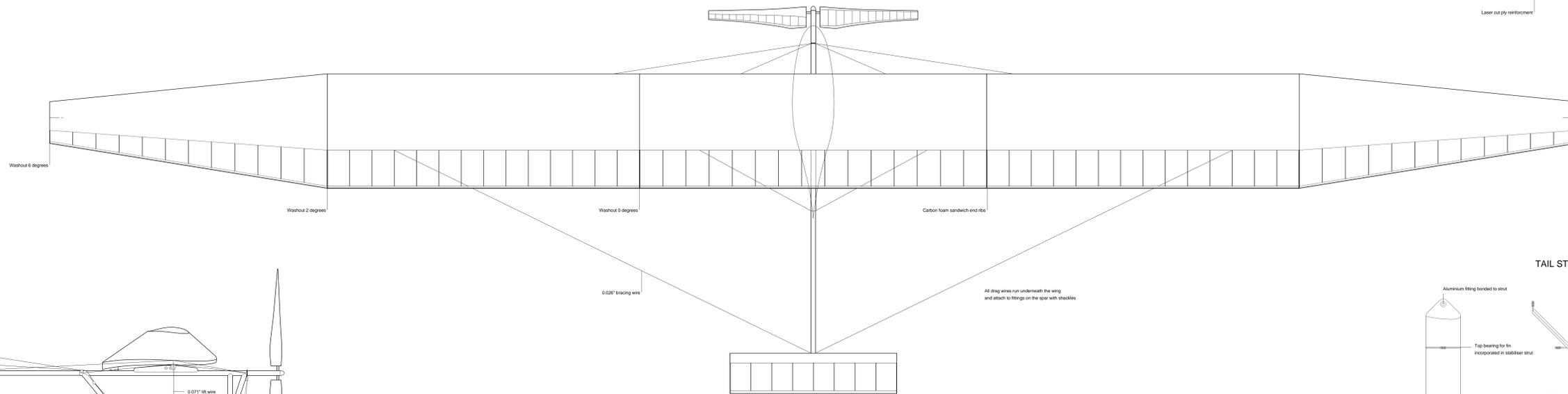
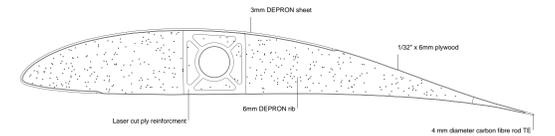
Built by David Barford, Designed by David Barford, Peer Frank and Chris Roper

span: 22 m  
 wing area: 33.1 square meters  
 aspect ratio: 14.62  
 empty weight: 43 kg on first flight, Now 56.6 kg  
 design speed: 6.5 m/s  
 design power: 278 W (pilot: 70kg 3.98 W / kg)  
 wing airfoil: PF25  
 stabiliser airfoil: PF9  
 rudder airfoil: PF9  
 prop airfoil: FX 60-100  
 prop diameter: 3 m  
 gear ratio 54/25 = 2.16

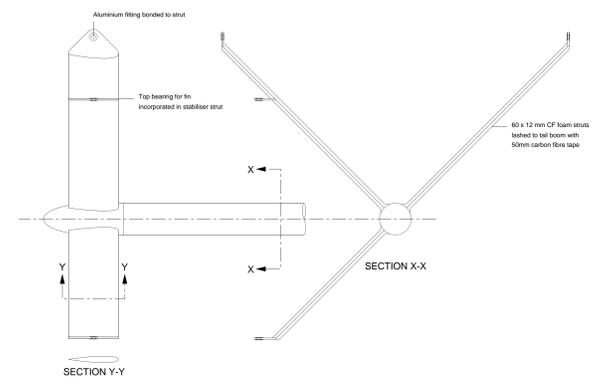
Butterfly weight 17.8.15

Item	Weight kg
Fuselage section	14.4
Tail boom	2
Rudder	1
Elevator	1.5
Propeller	1.5
Wing centre	10
Wing mid port	8
Wing mid starboard	8
Wing tip port	5
Wing tip starboard	5
Bracing wires	0.2
Total	56.6

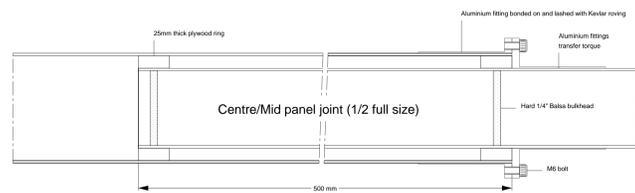
WING RIB  
 Airfoil: PF25  
 Scale: 1:8



TAIL STRUTS (scale 1:5)



Wing Panel Joints



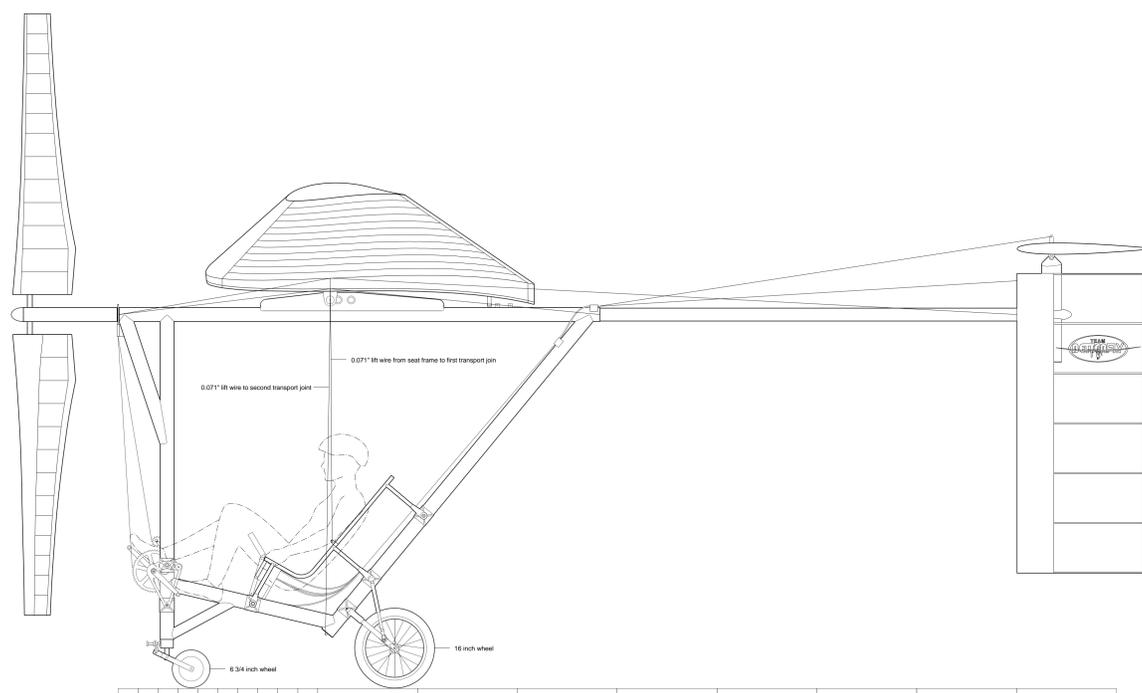
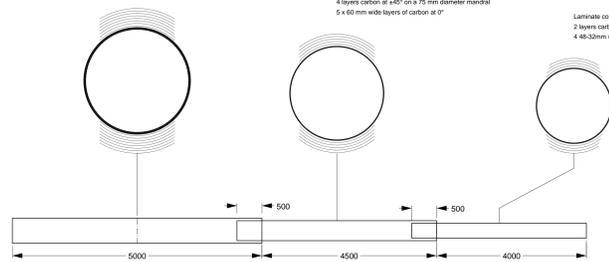
Sketch of Aluminium torque transfer fittings

Wing Spar Laminate

Laminate construction of inboard wing spar at CL  
 Quilt Se70L T8AC200/400/35% unidirectional carbon fibre pre prep  
 0.3 mm cured ply thickness  
 4 layers carbon at +45° on a 88 mm diameter mandrel  
 8 x 60 mm wide layers of carbon at 0°

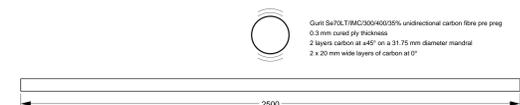
Laminate construction of outboard wing spar  
 4 layers carbon at +45° on a 75 mm diameter mandrel  
 5 x 60 mm wide layers of carbon at 0°

Laminate construction of 10 wing spar  
 2 layers carbon at +45° on a 63 mm diameter mandrel  
 4 48-32mm wide layers of carbon at 0°

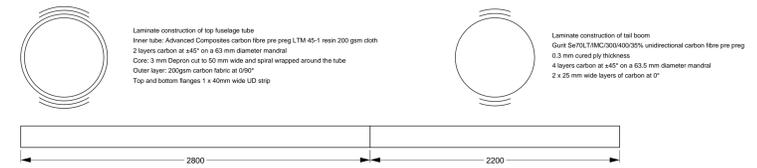


Side view showing internal structure. Scale: 1:12.5

Tailplain spar laminate



Fuselage top tube and tail boom lay ups



All the carbon tubes (except the wing spar and the tail boom) were made from Advanced Composites Pre-impreg LTM 45-1 resin 200g/m cloth with a cured thickness of 0.13mm. The cloth was cut to provide the +45 or 0/90 direction.

# Betterfly Human Powered Aircraft

Scale in m - 1:25

