

Design Loads

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 wing lift 150 lb @ 50 m/s  
 root bend.mom. 1400 lb-in  
 root cap load 3000 lb  
 root cap area 0.037 in<sup>2</sup> top  
 0.037 in<sup>2</sup> bot  
 cap stress 81 ksi top  
 81 ksi bot  
 wrap stress 11 ksi (shear)  
 root torsion 25 lb-in  
 root skin th. 0.007 in  
 wing skin shear 480 psi

Wing spar weights

-----  
 caps 56 g (prepreg uni CF)  
 core 15 g (6 lb endgrain balsa)  
 wrap 15 g (2 oz glass)  
 join 15 g (0.315" CF tube)  
 tubes 3 g (Kevlar)  
 boxes 6 g (plywood, glass)  
 glue 6 g

Wing structure weights

-----  
 core 97 g (2.3 lb Spyderfoam)  
 skin 83 g (1.7oz Kevlar)  
 spar 116 g  
 fill 6 g (microballoons+flox)  
 webs 7 g (vertical grain balsa)  
 misc 15 g

Wing panel weights

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 center 190 g  
 tips 134 g

CF boom  
 0.59" -> 0.34" ID  
 0.016" wall

2 layers

**Aegea II 2m**

Mark Drela 24 Aug 02

mass = 21 oz  
 m/A = 5.8 oz/ft<sup>2</sup>  
 area = 520 sq in  
 span = 78.6 in  
 A.R. = 11.9

Camber Settings

-----  
 Flap Aileron  
 winch: +20 +20  
 zoom : -2 -2  
 run : -2 -2  
 range: 0 0  
 float: +3 +3  
 brake: +60 +10

Flaps follow  
 ailerons 1:2

Kevlar fuselage shell  
 1.7oz 4 layers,  
 CF reinforcements

wing +3 deg.

tail +1 deg.

HT12  
 5.0% t  
 0.0% c

HT08  
 5.0% t  
 0.0% c

AG47ct  
 5.0% t  
 1.7% c  
 1.3% c  
 -0.5 deg

Spyderfoam  
 balsa insert  
 2.9 oz CF caps  
 1.0 oz Kevlar

All-moving tail  
 49 sq in 9.4%  
 Vh = 0.40  
 -17 ... +20 deg

AG46ct  
 6.1% t  
 2.0% c  
 1.7% c  
 -0.5 deg

Item weights

-----  
 650 NiMH 53 g  
 4 JR241 36 g  
 2 HS81MG 40 g  
 Quantum-6 14 g  
 wiring 12 g

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 fuse 78 g  
 boom 17 g  
 stab 10 g  
 rudd 8 g  
 wing 320 g

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 Total 588 g

AG45ct  
 6.9% t  
 2.2% c  
 1.8% c

AG44ct  
 7.3% t  
 2.3% c  
 1.9% c

36 sq in 6.9%  
 Vv = 0.026  
 +/-30 deg

CF V-strut  
 CF platform/horn  
 4-40 Nylon bolt

Spyder foam  
 1.0 oz Kevlar  
 Kevlar hinge

