



Design Loads

wing lift 150 lb @ 57 m/s
 root bend.mom. 1400 lb-in
 root cap load 2500 lb
 root cap area 0.036 in² top
 0.027 in² bot
 cap stress 88 ksi top
 118 ksi bot
 skin stress 12 ksi (shear)
 root torsion 25 lb-in
 root skin th. 0.006 in
 wing skin shear 725 psi

HT12 5.0% t 0.0% c
 HT08 5.0% t 0.0% c

Wing spar weights

caps 46 g (prepreg uni CF)
 core 20 g (5 lb endgrain balsa)
 skin 20 g (+/-45 3oz CF cloth)
 join 18 g (prepreg CF plate)
 boxes 8 g (basswood, CF cloth)

Wing structure weights

core 70 g (2.2 lb foam)
 skin 130 g (1,2,3 x 1.5oz glass)
 spar 115 g
 fill 25 g (microballoons+flox)
 spoi 15 g (co-cured foam/glass)
 ribs 10 g (vertical grain balsa)
 misc 13 g

Wing panel weights

center 224 g
 mids 125 g
 tips 28 g

Kevlar fuselage shell
 1.85oz 4 layers,
 CF reinforcements

CF boom
 0.55" -> 0.32" ID
 0.022" wall

5 lb balsa
 bass insert
 0.75 oz glass

All-moving tail
 39 sq in 7.5%
 Vh = 0.33
 -17 ... +10 deg
 strong expo
 -6 deg mix-in
 with full spoiler

Allegro
2-meter RES
 Mark Drela 30 Mar 00

Item weights

mass = 22 oz
 = 34 oz ballasted
 m/A = 6.1 oz/ft² @ 22 oz
 = 9.4 oz/ft² @ 34 oz
 area = 520 sq in
 span = 78.6 in
 A.R. = 11.9
 CL = 0.9 max
 = 0.7 min sink
 = 0.5 max L/D
 = 0.1 min
 min sink = 0.95 ft/s @ 22 oz
 1.20 ft/s @ 34 oz
 max L/D = 21.5 @ 22 oz
 25.0 @ 34 oz

350mAh 57 g
 3 JR241 27 g
 Hitec 555 23 g
 fuse 73 g
 boom 22 g
 stab 8 g
 rudd 8 g
 wing 377 g
 ball 37 g

CG 3.3in
 from LE

wing +2 deg.

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

0.020" steel pushrods
 polyethylene housings
 on top of boom

32 sq in 6.2%
 Vv = 0.024
 +/-20 deg
 strong expo

5 lb balsa
 0.75 oz glass
 Kevlar hinge

10-32 Nylon bolts

tail 0 deg.

