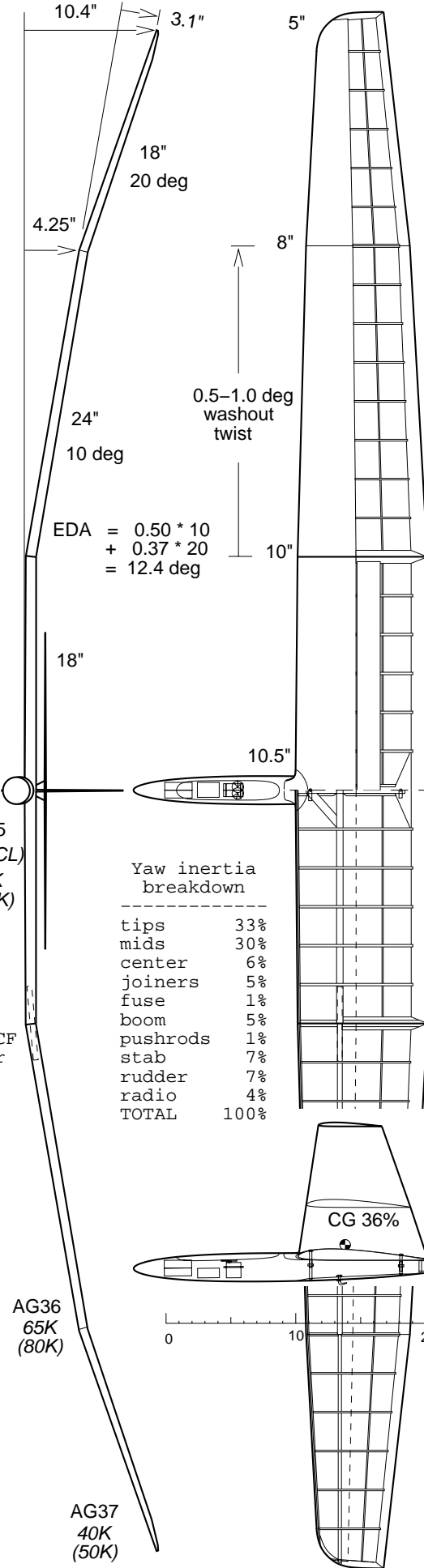


Bubble Dancer RES

1:12 scale

Mark Drela 20 Feb 02



- 3g caps
- 2g core
- 6g LE sheet
- 1g LE
- 2g TE
- 4g ribs
- 1g tip
- 1g glue
- 7g transp. Oracover
- 27g TOTAL tip panel

- 11g caps
- 10g core
- 2g wrap
- 14g LE sheet
- 2g LE
- 6g TE
- 13g ribs
- 1g sag strip
- 7g joiner box
- 2g glue
- 1g glass
- 13g transp. Oracover
- 82g TOTAL mid panel

- 46g caps
- 32g core
- 4g wrap
- 46g LE sheet
- 4g LE
- 14g TE
- 2g sag strip
- 18g spoiler
- 32g ribs
- 13g bolt beam
- 22g joiner boxes
- 2g gussets
- 5g glue
- 4g glass
- 24g transp. Oracover
- 271g TOTAL center panel

- 53g shell
- 9g hatch
- 10g side beams
- 15g hook beam
- 7g bulkheads
- 5g towhook
- 3g seams
- 8g glue
- 8g pushrods
- 36g boom
- 3g V-mount
- 157g TOTAL fuselage

mass = 31 oz
 = 54 oz ballasted
 m/A = 4.4 oz/ft² @ 31 oz
 = 7.7 oz/ft² @ 54 oz
 area = 1014 sq in
 span = 117 in
 A.R. = 13.5
 CL = 1.1 max
 = 0.8 min sink
 = 0.6 max L/D
 = 0.1 min
 min sink = 0.80 ft/s @ 31 oz
 = 0.96 ft/s @ 54 oz
 max L/D = 23.0 @ 31 oz
 = 26.0 @ 54 oz

Item weights

4x700mAh	90 g
1 HS81	17 g
2 JR341	36 g
Hitec 555	23 g
wiring	6 g
fuse	157 g
stab	21 g
rudd	17 g
rods	32 g
wing	489 g
TOTAL	888 g
	31 oz

Yaw inertia breakdown

tips	33%
mids	30%
center	6%
joiners	5%
fuse	1%
boom	5%
pushrods	1%
stab	7%
rudder	7%
radio	4%
TOTAL	100%

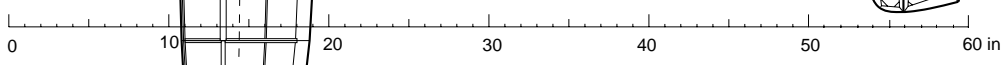
Inertias

Roll	: 0.205 kg-m ²
Pitch	: 0.076 kg-m ²
Yaw	: 0.278 kg-m ²

All-moving tail
 100 sq in 9.8%
 Vh = 0.40
 -20 ... +12 deg
 -6 deg mix-in
 with full spoiler

73 sq in 7.2%
 Vv = 0.025
 +/-35 deg

36" CF boom stab at 0 deg
 0.75" -> 0.42" ID to wing bottom
 0.025" wall



Design (never-exceed) Loads

wing lift	150 lb @ 90 mph, CL=1.0
root bend.mom.	2100 lb-in
root cap load	2800 lb
root cap area	0.030 in ²
cap stress	93 ksi
web stress	215 psi (shear)
root torsion	19 lb-in
root Dbox th.	0.094 in
wing Dbox shear	40 psi

AG35
 Re sqrt(CL)
 80K
 (100K)

3/8" CF
 joiner
 rod

AG36
 65K
 (80K)

AG37
 40K
 (50K)