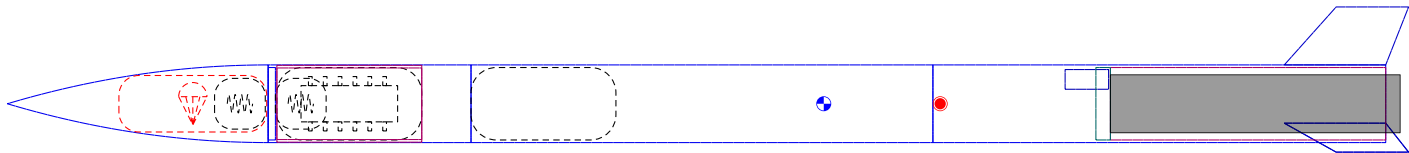


Rocket Design



Rocket
Stages: 1
Mass (with motor): 1993 g
Stability: 1.5 cal
CG: 563 mm
CP: 644 mm

Altitude	160 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	49 s	G74W	76.2 N	1.12 s	91.2 N	85.3 Ns	5.94:1	39.3 g	29/83 mm
Time to Apogee	6.2 s								
Optimum Delay	5.1 s								
Velocity off Pad	10.4 m/s								
Max Velocity	54.4 m/s								
Velocity at Deployment	12.5 m/s								
Landing Velocity	3.62 m/s								

F37-6

Altitude	44 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	15.6 s	F37	32.6 N	1.55 s	46.5 N	50.7 Ns	2.50:1	28.2 g	29/99 mm
Time to Apogee	3.75 s								
Optimum Delay	2.22 s								
Velocity off Pad	6.67 m/s								
Max Velocity	23.6 m/s								
Velocity at Deployment	7.92 m/s								
Landing Velocity	3.8 m/s								

E15-7

Altitude	13.5 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	6.87 s	E15	15.7 N	2.53 s	28.8 N	39.8 Ns	1.26:1	20.1 g	24/70 mm
Time to Apogee	2.69 s								
Optimum Delay	0.1 s								
Velocity off Pad	4.12 m/s								
Max Velocity	14.8 m/s								
Velocity at Deployment	11.7 m/s								
Landing Velocity	3.73 m/s								

B1-P

Altitude	0 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	2.91 s	B1	1.88 N	2.42 s	3.87 N	4.61 Ns	0.14:1	24 g	24/40 mm
Time to Apogee	0 s								
Optimum Delay	N/A								
Velocity off Pad	N/A								
Max Velocity	0 m/s								
Velocity at Deployment	N/A								
Landing Velocity	0 m/s								

F46-P

Altitude	71.6 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	23.2 s	F46	47.9 N	1.47 s	52.5 N	70.3 Ns	3.13:1	142 g	40/70 mm
Time to Apogee	4.6 s								
Optimum Delay	3.22 s								
Velocity off Pad	6.46 m/s								
Max Velocity	32.3 m/s								
Velocity at Deployment	7.92 m/s								
Landing Velocity	3.98 m/s								

F87-P

Altitude	41.5 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	12.9 s	F87	91.9 N	0.686 s	119 N	63.1 Ns	4.70:1	130 g	40/200 mm
Time to Apogee	3.31 s								
Optimum Delay	2.7 s								
Velocity off Pad	8.49 m/s								
Max Velocity	25.7 m/s								
Velocity at Deployment	2.64 m/s								
Landing Velocity	4.59 m/s								

Parts Detail

Sustainer



Nose cone

PLA
(1.3 g/cm³)

Parabolic
series

Len: 180 mm

Mass: 47 g



Parachute

Ripstop nylon
(67 g/m²)

Dia_{out} 1782
mm

Len: 102 mm

Mass: 174 g

Shroud Lines

Elastic cord
(flat 6 mm, 1/4
in)
(4.3 g/m)

Lines: 8

Len: 200 mm



Shock cord

Tubular nylon
(25 mm, 1 in)
(29 g/m)

Len: 200 mm

Mass: 5.8 g



Body tube

PLA
(1.3 g/cm³)

Dia_{in} 50 mm
Dia_{out} 53.6 mm

Len: 140 mm

Mass: 53.3 g



Shock cord

Tubular nylon
(25 mm, 1 in)
(29 g/m)

Len: 200 mm

Mass: 5.8 g



Altimeter

Dia_{out} 50 mm

Mass: 300 g



Electronics bay

Cardboard
(0.68 g/cm³)

Dia_{in} 49.4 mm
Dia_{out} 53 mm

Len: 100 mm

Mass: 19.7 g



Extra tube

PLA
(1.3 g/cm³)

Dia_{in} 50 mm
Dia_{out} 53.6 mm

Len: 319 mm

Mass: 121 g



Tolerance

Dia_{out} 50 mm

Mass: 276 g



Tail

PLA
(1.3 g/cm³)

Dia_{in} 50 mm
Dia_{out} 53.6 mm

Len: 313 mm

Mass: 119 g



Trapezoidal fin set (3)

PLA
(1.3 g/cm³)

Thick: 3.6 mm

Mass: 33.7 g



Launch lug

PLA
(1.3 g/cm³)

Dia_{in} 10 mm
Dia_{out} 13.6 mm

Len: 30 mm

Mass: 2.6 g



Motor bracket

PLA
(1.3 g/cm³)

Dia_{in} 48 mm
Dia_{out} 50 mm

Len: 190 mm

Mass: 38 g



Engine block

PLA
(1.3 g/cm³)

Dia_{in} 0 mm
Dia_{out} 50 mm

Len: 10 mm

Mass: 25.5 g

