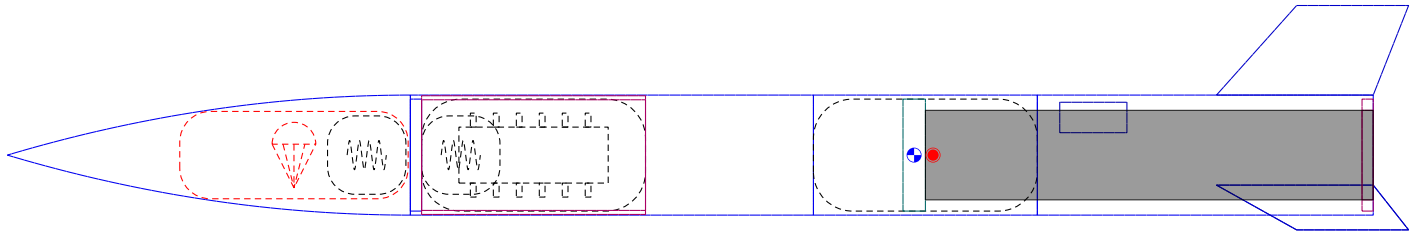


Rocket Design



Rocket
Stages: 1
Mass (with motor): 857 g
Stability: 0.158 cal
CG: 405 mm
CP: 413 mm

B1-P		Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Altitude	0 m	B1	1.88 N	2.42 s	3.87 N	4.61 Ns	0.30:1	24 g	24/40 mm
Flight Time	2.91 s								
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		Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Altitude	73.7 m	F46	47.9 N	1.47 s	52.5 N	70.3 Ns	5.63:1	142 g	40/70 mm
Flight Time	9.62 s								
Time to Apogee	3.9 s								
Optimum Delay	2.51 s								
Velocity off Pad	9.4 m/s								
Max Velocity	50.1 m/s								
Velocity at Deployment	6.8 m/s								
Landing Velocity	17.1 m/s								

E23-P

Altitude	55.3 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	8.73 s	E23	25.6 N	1.24 s	32.1 N	31.9 Ns	3.05:1	130 g	40/200
Time to Apogee	4.06 s								mm
Optimum Delay	2.75 s								
Velocity off Pad	7.41 m/s								
Max Velocity	28.2 m/s								
Velocity at Deployment	0.979 m/s								
Landing Velocity	17 m/s								

E17-P20-04-2021 Rocket Test

Altitude	74.1 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	10.7 s	E17	20.9 N	1.71 s	50.9 N	36.3 Ns	2.49:1	140 g	40/200
Time to Apogee	4.72 s								mm
Optimum Delay	2.7 s								
Velocity off Pad	9.21 m/s								
Max Velocity	29.9 m/s								
Velocity at Deployment	1.51 m/s								
Landing Velocity	17 m/s								

Parts Detail

Sustainer



Nose cone

PLA
(1.3 g/cm³)

Parabolic
series

Len: 180 mm

Mass: 47 g



Parachute

Polyethylene
(heavy)
(40 g/m²)

Dia_{out} 300 mm

Len: 102 mm

Mass: 6.27 g

Shroud Lines

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

Lines: 8

Len: 100 mm



Shock cord

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

Len: 100 mm

Mass: 2.9 g



Body tube

PLA
(1.3 g/cm³)

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

Len: 180 mm

Mass: 68.5 g



Shock cord

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

Len: 100 mm

Mass: 2.9 g



Altimeter

Dia_{out} 50 mm

Mass: 120 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: 100 mm

Mass: 38.1 g



Tolerance

Dia_{out} 50 mm

Mass: 100 g



Tail

PLA
(1.3 g/cm³)

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

Len: 150 mm

Mass: 57.1 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



Engine block

PLA
(1.3 g/cm³)

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

Len: 10 mm

Mass: 25.5 g



Centering ring

Cardboard
(0.68 g/cm³)

Dia_{in} 40 mm
Dia_{out} 50 mm

Len: 5 mm

Mass: 2.4 g

