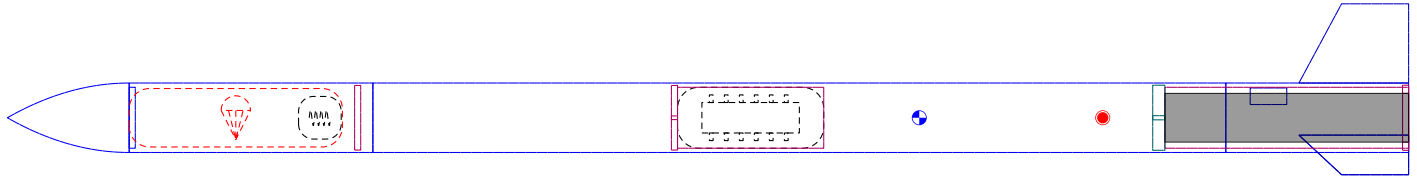


Rocket Design



Rocket

Stages: 1

Mass (with motor): 1250 g

Stability: 2.64 cal

CG: 748 mm

CP: 899 mm

E1 / -F

Altitude	29.6 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	8.61 s	E17	20.9 N	1.71 s	50.9 N	36.3 Ns	1.73:1	140 g	40/200 mm
Time to Apogee	3.3 s								
Optimum Delay	1.3 s								
Velocity off Pad	7.9 m/s								
Max Velocity	17 m/s								
Velocity at Deployment	2.39 m/s								
Landing Velocity	6.34 m/s								

G146-P

Altitude	268 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	48.6 s	G146	153 N	0.716 s	203 N	110 Ns	11.74:1	118 g	40/200 mm
Time to Apogee	7.55 s								
Optimum Delay	6.92 s								
Velocity off Pad	13.2 m/s								
Max Velocity	78 m/s								
Velocity at Deployment	7.01 m/s								
Landing Velocity	6.61 m/s								

G106-P

Altitude	280 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	51 s	G106	110 N	1.05 s	139 N	115 Ns	8.39:1	128 g	40/200 mm
Time to Apogee	7.91 s								
Optimum Delay	6.9 s								
Velocity off Pad	11.3 m/s								
Max Velocity	78.3 m/s								
Velocity at Deployment	8.53 m/s								
Landing Velocity	6.64 m/s								

E23-P

Altitude	22.6 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	7.18 s	E23	25.6 N	1.24 s	32.1 N	31.9 Ns	2.16:1	130 g	40/200 mm
Time to Apogee	2.91 s								
Optimum Delay	1.6 s								
Velocity off Pad	5.94 m/s								
Max Velocity	16.2 m/s								
Velocity at Deployment	1.08 m/s								
Landing Velocity	6.27 m/s								

E21-P

Altitude	13 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	4.89 s	E21	43.4 N	0.433 s	217 N	21.7 Ns	3.59:1	140 g	40/200 mm
Time to Apogee	2.04 s								
Optimum Delay	1.1 s								
Velocity off Pad	10.1 m/s								
Max Velocity	11.8 m/s								
Velocity at Deployment	0.831 m/s								
Landing Velocity	6.27 m/s								

F65-P

Altitude	137 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	28.2 s	F65	67.7 N	1.08 s	84.4 N	72.9 Ns	5.53:1	148 g	40/200 mm
Time to Apogee	5.81 s								
Optimum Delay	4.82 s								
Velocity off Pad	9.01 m/s								
Max Velocity	50.5 m/s								
Velocity at Deployment	6.38 m/s								
Landing Velocity	6.33 m/s								

Parts Detail

Sustainer

	Nose cone	PLA (1.3 g/cm ³)	Parabolic series	Len: 100 mm	Mass: 70.9 g
	Body tube	PLA (1.3 g/cm ³)	Dia _{in} 53 mm Dia _{out} 57 mm	Len: 200 mm	Mass: 89.8 g
	Shock cord	Elastic cord (flat 12 mm, 1/2 in) (8 g/m)		Len: 100 mm	Mass: 0.8 g
	Altimeter block	PLA (1.3 g/cm ³)	Dia _{in} 0 mm Dia _{out} 53 mm	Len: 5 mm	Mass: 14.3 g
	Parachute	Polyethylene (heavy) (40 g/m ²)	Dia _{out} 1000 mm	Len: 175 mm	Mass: 34.9 g
	Shroud Lines	Elastic cord (flat 6 mm, 1/4 in) (4.3 g/m)	Lines: 8	Len: 100 mm	
	Body tube	PVC (1.39 g/cm ³)	Dia _{in} 53 mm Dia _{out} 57 mm	Len: 700 mm	Mass: 336 g
	Altimeter		Dia _{out} 50 mm		Mass: 91 g
	Electronics bay	PLA (1.3 g/cm ³)	Dia _{in} 48 mm Dia _{out} 50 mm	Len: 120 mm	Mass: 24 g
	Altimeter block	PLA (1.3 g/cm ³)	Dia _{in} 3 mm Dia _{out} 53 mm	Len: 5 mm	Mass: 14.3 g
	Tail	PLA (1.3 g/cm ³)	Dia _{in} 53.4 mm Dia _{out} 57 mm	Len: 150 mm	Mass: 60.9 g
	Trapezoidal fin set (3)	PLA (1.3 g/cm ³)	Thick: 3.6 mm		Mass: 66.2 g
	Launch lug	PLA (1.3 g/cm ³)	Dia _{in} 10 mm Dia _{out} 13.6 mm	Len: 30 mm	Mass: 2.6 g
	Motor bracket	PLA (1.3 g/cm ³)	Dia _{in} 48 mm Dia _{out} 50 mm	Len: 200 mm	Mass: 40 g
	Engine block	PLA (1.3 g/cm ³)	Dia _{in} 3.4 mm Dia _{out} 53.4 mm	Len: 10 mm	Mass: 29 g
	Centering ring	PLA (1.3 g/cm ³)	Dia _{in} 40 mm Dia _{out} 53.4 mm	Len: 5 mm	Mass: 6.39 g

