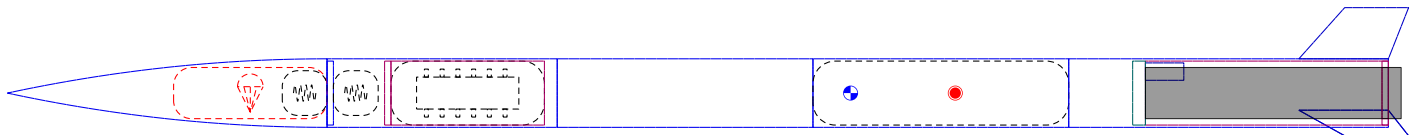


Rocket Design



Rocket

Stages: 1
Mass (with motor): 1290 g
Stability: 1.53 cal
CG: 659 mm
CP: 741 mm

Altitude	253 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	82.8 s	G74W	76.2 N	1.12 s	91.2 N	85.3 Ns	7.57:1	39.3 g	29/83 mm
Time to Apogee	7.54 s								
Optimum Delay	6.43 s								
Velocity off Pad	11.7 m/s								
Max Velocity	72 m/s								
Velocity at Deployment	11 m/s								
Landing Velocity	3.4 m/s								

F37-6

Altitude	80.8 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	28.8 s	F37	32.6 N	1.55 s	46.5 N	50.7 Ns	3.17:1	28.2 g	29/99 mm
Time to Apogee	4.82 s								
Optimum Delay	3.25 s								
Velocity off Pad	7.61 m/s								
Max Velocity	33.6 m/s								
Velocity at Deployment	6.63 m/s								
Landing Velocity	3.4 m/s								

E15-7

Altitude	37.2 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	15.5 s	E15	15.7 N	2.53 s	28.8 N	39.8 Ns	1.61:1	20.1 g	24/70 mm
Time to Apogee	3.89 s								
Optimum Delay	1.3 s								
Velocity off Pad	5.39 m/s								
Max Velocity	17.3 m/s								
Velocity at Deployment	10.1 m/s								
Landing Velocity	3.26 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	0.18:1	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	118 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	39.1 s	F46	47.9 N	1.47 s	52.5 N	70.3 Ns	3.81:1	142 g	40/70 mm
Time to Apogee	5.68 s								
Optimum Delay	4.3 s								
Velocity off Pad	7.23 m/s								
Max Velocity	43 m/s								
Velocity at Deployment	4.1 m/s								
Landing Velocity	3.52 m/s								

F87-P

Altitude	107 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	34.9 s	F87	91.9 N	0.686 s	119 N	63.1 Ns	7.27:1	130 g	40/200 mm
Time to Apogee	5.04 s								
Optimum Delay	4.4 s								
Velocity off Pad	10.4 m/s								
Max Velocity	44.4 m/s								
Velocity at Deployment	3.93 m/s								
Landing Velocity	3.72 m/s								

G168-P

Altitude	356 m	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	106 s	G168	176 N	0.686 s	240 N	121 Ns	13.94:1	130 g	40/200 mm
Time to Apogee	8.63 s								
Optimum Delay	7.98 s								
Velocity off Pad	14.2 m/s								
Max Velocity	90.7 m/s								
Velocity at Deployment	7.93 m/s								
Landing Velocity	3.56 m/s								

Parts Detail

Sustainer



Nose cone	PLA (1.3 g/cm ³)	Parabolic series	Len: 250 mm	Mass: 64.4 g
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Parachute	Polyethylene (heavy) (40 g/m ²)	Dia _{out} 1782 mm	Len: 120 mm	Mass: 107 g
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Shroud Lines	Elastic cord (flat 6 mm, 1/4 in) (4.3 g/m)	Lines: 8	Len: 200 mm	
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Shock cord	Tubular nylon (25 mm, 1 in) (29 g/m)		Len: 200 mm	Mass: 5.8 g
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Body tube	PLA (1.3 g/cm ³)	Dia _{in} 50 mm Dia _{out} 53.6 mm	Len: 180 mm	Mass: 68.5 g
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Shock cord	Tubular nylon (25 mm, 1 in) (29 g/m)		Len: 200 mm	Mass: 5.8 g
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Altimeter		Dia _{out} 50 mm		Mass: 200 g
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Electronics bay	PLA (1.3 g/cm ³)	Dia _{in} 48 mm Dia _{out} 50 mm	Len: 120 mm	Mass: 24 g
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Altimeter block	PLA (1.3 g/cm ³)	Dia _{in} 0 mm Dia _{out} 50 mm	Len: 5 mm	Mass: 12.8 g
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Extra tube	PLA (1.3 g/cm ³)	Dia _{in} 50 mm Dia _{out} 53.6 mm	Len: 200 mm	Mass: 76.2 g
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Extra tube	PLA (1.3 g/cm ³)	Dia _{in} 50 mm Dia _{out} 53.6 mm	Len: 200 mm	Mass: 76.2 g
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Tolerance		Dia _{out} 50 mm		Mass: 100 g
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Tail	PLA (1.3 g/cm ³)	Dia _{in} 50 mm Dia _{out} 53.6 mm	Len: 250 mm	Mass: 95.2 g
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Trapezoidal fin set (3)	PLA (1.3 g/cm ³)	Thick: 3.6 mm		Mass: 33.7 g
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Launch lug	PLA (1.3 g/cm ³)	Dia _{in} 10 mm Dia _{out} 13.6 mm	Len: 30 mm	Mass: 2.6 g
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Motor bracket	PLA (1.3 g/cm ³)	Dia _{in} 48 mm Dia _{out} 50 mm	Len: 190 mm	Mass: 38 g
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Engine block	PLA (1.3 g/cm ³)	Dia _{in} 0 mm Dia _{out} 50 mm	Len: 10 mm	Mass: 25.5 g
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Centering ring	PLA (1.3 g/cm ³)	Dia _{in} 40 mm Dia _{out} 50 mm	Len: 5 mm	Mass: 4.59 g
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