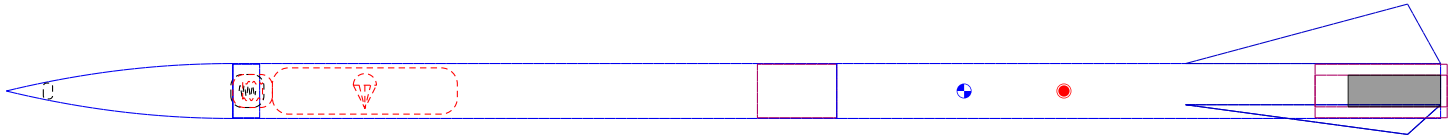


Rocket Design



Rocket

Stages: 1

Mass (with motor): 194 g

Stability: 1.82 cal

CG: 72.5 cm

CP: 80.1 cm

D12-3

		Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Altitude	198 m	D12	10.4 N	1.61 s	29.7 N	16.8 Ns	5.49:1	21.1 g	24/70 mm
Flight Time	59.7 s								
Time to Apogee	6.46 s								
Optimum Delay	4.9 s								
Velocity off Pad	14.2 m/s								
Max Velocity	65.5 m/s								
Velocity at Deployment	1.91 m/s								
Landing Velocity	3.62 m/s								











D12-3

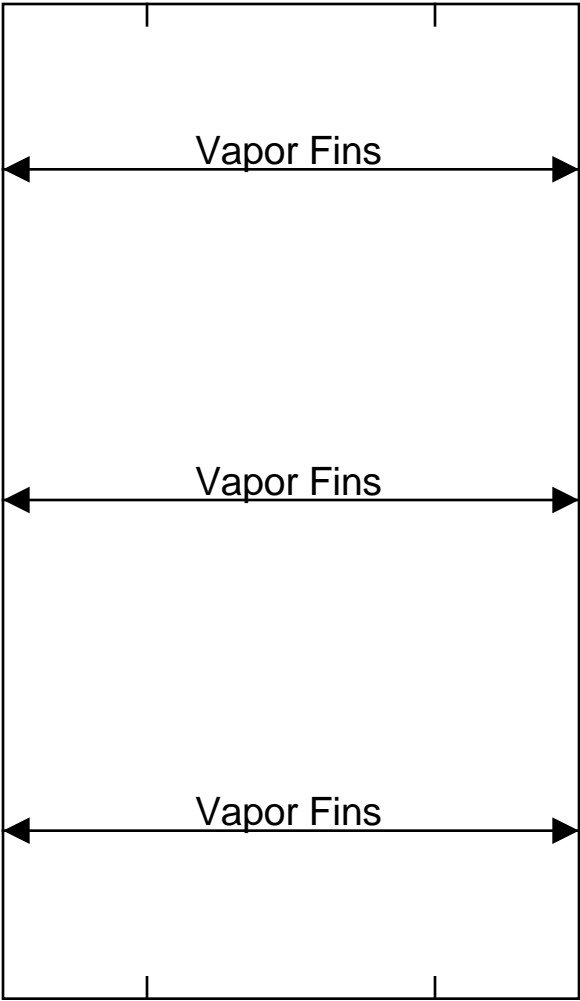
		Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Altitude	183 m	D12	10.4 N	1.61 s	29.7 N	16.8 Ns	5.49:1	21.1 g	24/70 mm
Flight Time	54.3 s								
Time to Apogee	5.14 s								
Optimum Delay	4.82 s								
Velocity off Pad	14.2 m/s								
Max Velocity	65.5 m/s								
Velocity at Deployment	18.5 m/s								
Landing Velocity	3.94 m/s								

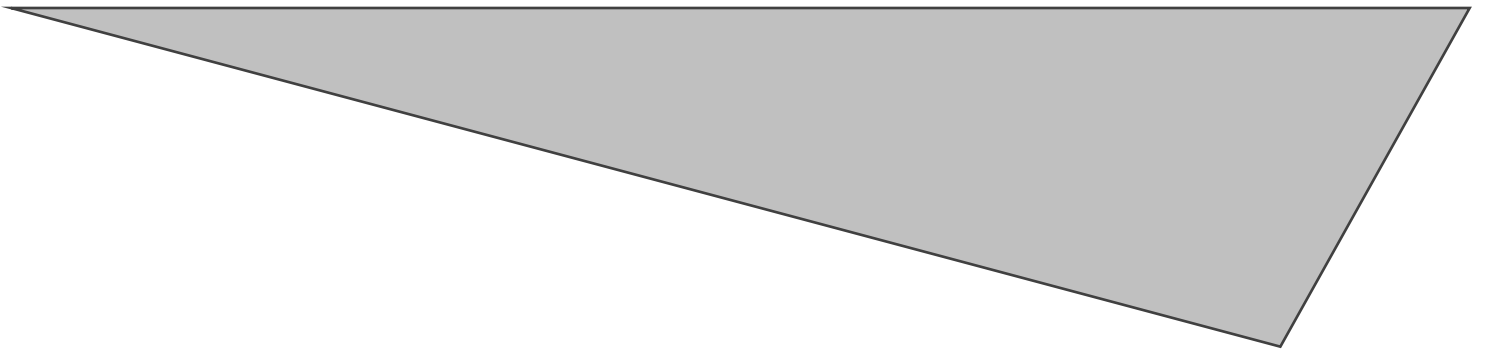
E9-8

Parts Detail

Sustainer

	Nose cone Estes PNC-60AH	Polystyrene PS (0.67 g/cm ³)	Parabolic series	Len: 17.1 cm	Mass: 28.3 g
	Shock cord	Elastic cord (flat 12 mm, 1/2 in) (8 g/m)		Len: 88 cm	Mass: 7.04 g
	Stability Weight		Dia _{out} 1.2 cm		Mass: 10 g
	Body tube Estes EST 3089	Paper (0.609 g/cm ³)	Dia _{in} 4.05 cm Dia _{out} 4.16 cm	Len: 45.7 cm	Mass: 19.1 g
	Tube coupler	Cardboard (0.68 g/cm ³)	Dia _{in} 4.05 cm Dia _{out} 4.05 cm	Len: 6 cm	Mass: 0 g
	One Way Rocketry UP-18 Parachute	Polyethylene (thin) (15 g/m ²)	Dia _{out} 45.8 cm	Len: 14 cm	Mass: 3.66 g
	Shroud Lines	Thread (heavy-duty) (0.3 g/m)	Lines: 9	Len: 44 cm	
	Streamer	Polyethylene (heavy) (40 g/m ²)	Length 29 cm Width 3 cm	Len: 3 cm	Mass: 0.348 g
	Body tube Estes EST 3089	Paper (0.609 g/cm ³)	Dia _{in} 4.05 cm Dia _{out} 4.16 cm	Len: 45.7 cm	Mass: 19.1 g
	Vapor Fins (3)	Balsa (0.17 g/cm ³)	Thick: 0.3 cm		Mass: 6.64 g
	Engine block	Cardboard (0.68 g/cm ³)	Dia _{in} 2.4 cm Dia _{out} 4.05 cm	Len: 10 cm	Mass: 56.9 g





in cm

