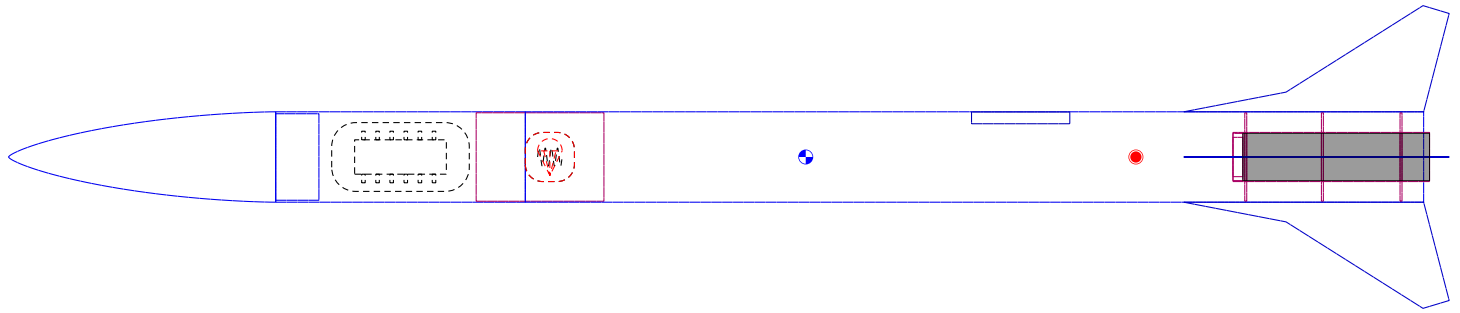


## Rocket Design



## Estes Model Rocket

Stages: 1

Mass (with motor): 187 g

Stability: 3.65 cal

CG: 406 mm






CP: 574 mm

## E12-0

Altitude	1289 ft	Motor	Avg Thrust	Burn Time	Max Thrust	Total Impulse	Thrust to Wt	Propellant Wt	Size
Flight Time	93.8 s	E12	11.2 N	2.41 s	33 N	27.1 Ns	6.14:1	35.9 g	24/95 mm
Time to Apogee	8.6 s								
Optimum Delay	6.24 s								
Velocity off Pad	33.3 mph								
Max Velocity	229 mph								
Velocity at Deployment	5.17 mph								
Landing Velocity	9.97 mph								

## Parts Detail

### Sustainer

	Nose cone	Polystyrene (0.607 oz/in <sup>3</sup> )	Haack series	Len: 136 mm	Mass: 28.7 g
	Payload Section	Maple (0.436 oz/in <sup>3</sup> )	Dia <sub>in</sub> 45 mm Dia <sub>out</sub> 46 mm	Len: 127 mm	Mass: 6.85 g
	Tube coupler	Polystyrene (0.607 oz/in <sup>3</sup> )	Dia <sub>in</sub> 44.5 mm Dia <sub>out</sub> 45 mm	Len: 65 mm	Mass: 2.4 g
	Flight Computer		Dia <sub>out</sub> 35 mm		Mass: 40 g
	Main Body Tube	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 45 mm Dia <sub>out</sub> 46 mm	Len: 457 mm	Mass: 22.2 g
	Shock cord	Elastic cord (flat 6 mm, 1/4 in) (0.046 oz/ft)		Len: 900 mm	Mass: 3.87 g
	Parachute	Ripstop nylon (0.22 oz/ft <sup>2</sup> )	Dia <sub>out</sub> 450 mm	Len: 25 mm	Mass: 11.5 g
	Shroud Lines	Thread (heavy-duty) (0.003 oz/ft)	Lines: 6	Len: 450 mm	
	Motor Mount	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 24 mm Dia <sub>out</sub> 25 mm	Len: 100 mm	Mass: 2.62 g
	Engine block	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 20 mm Dia <sub>out</sub> 24 mm	Len: 5 mm	Mass: 0.47 g
	Centering ring	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 25 mm Dia <sub>out</sub> 45 mm	Len: 1 mm	Mass: 0.748 g
	Centering ring	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 25 mm Dia <sub>out</sub> 45 mm	Len: 1 mm	Mass: 0.748 g
	Centering ring	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 25 mm Dia <sub>out</sub> 45 mm	Len: 1 mm	Mass: 0.748 g
	Freeform fin set (4)	Balsa (0.098 oz/in <sup>3</sup> )	Thick: 3 mm		Mass: 5.77 g
	Launch lug	Cardboard (0.393 oz/in <sup>3</sup> )	Dia <sub>in</sub> 5 mm Dia <sub>out</sub> 6 mm	Len: 50 mm	Mass: 0.294 g

