

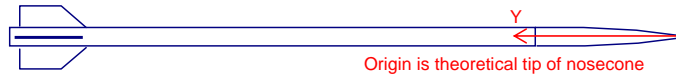


*MiniSShot*

Vehicle Mass Statement

Iteration 2

Rev. 2009/09/20



No.	Item	Note	Mass (grams)	Ystation (mm)	Mass Measured or Estimate?
1	Nozzle	complete	914	3091	E *
2	Mid-bulkhead (less Delay Plug)	complete	506	2144	E *
3	Forward bulkhead	complete	214	1235	E *
4	Aft casing	painted	1118	2633	E *
5	Forward casing	painted	1093	1662	E *
6	Aft casting tubes	Assembly	723.1	2637	E *
7	Forward casting tubes	Assembly	633.3	1671	E *
8	Aft casing thermal barrier		93.5	2637	E
9	Forward casing thermal barrier		91.4	1662	E
10	Propellant, aft chamber		5250	2637	E *
11	Propellant, forward chamber		5250	1671	E *
12	Closure attachment screws, nozzle	24 total	27.4	3093	M
13	Closure attachment screws, midbulk	48 total	54.7	2143	M
14	Closure attachment screws, fwd bulk	24 total	27.4	1220	M
15	Igniter (forward chamber)		20	1272	E
16	fins	4	220	2956	E
17	Aft Avionics Fairing	painted	103	1051	E
18	Recovery compartment fairing	painted	127	745	E
19	Motor coupler		41	1180	E
20	Aft tapered coupler		37	928	E
21	Forward tapered coupler		35	911.5	E
22	Nosecone coupler		58	561	E
23	Pyro Separation Link		50	919.5	E
24	Aiptek camera	complete	186	1084	M
25	Aiptek camera support		40	1084	E
26	Capsule Recovery beacon + Amp	incl.cases	75.2	979	M
27	Capsule Recovery beacon & amp batteries	incl.cases	80.7	979	M
28	Recovery beacon supports		30	979	E
29	Booster Recovery beacon + Amp	incl.cases	75.2	221	M
30	Booster Recovery beacon/ amp batteries	incl. case	80.7	221	M
31	Drogue chutes	2	82	886	E
32	Main parachute		58	730	E
33	drogue tether	2	116	850	E
34	main tether		58	617	E
35	Pyro Release Device + fittings		100	607	E
36	Main computer		50	403	M
37	Chute Controller		40	562	E
38	Telemetry transmitter (TinyTrack)		34	487	M
39	GPS unit	with original cable	102	487	M
40	MiniATV unit		170	487	M
41	Nosecone	painted	240	205	M
42	Avionics (fwd) support structure		50	457	E
43	thermal sensors		18	210	E
44	thermal board		14.7	400	E
45	vibration sensor	incl. battery	20	325	E
46	DTMF & GMRS receiver		37.1	300	E
47	Power supply, DTMF		0	300	E
48	Power supply, GMRS receiver		30	300	E
49	Power supply, MC		60	400	E
50	Power supply, CC		60	562	E
51	Power supply, telemetry		100	487	E
52	Pressure transducer		75	1185	M
53	tether anchor fitting		50	1185	E
54	Delay plug		174	2200	E *
55	FeatherWeight Altimeter		11.1	562	M
56	FeatherWeight power supply		15	562	E
57	Camera mirror & fairings		25	1023	E
58	Wiring		100	820	E
59	Miscellaneous		150	820	E
60					

asterix denotes value based on ProtoSShot III actual mass

Total liftoff mass	19294 grams	42.5 lbs.
Dry mass	8794 grams	19.4 lbs.
Dry mass (less delay plug)	8620 grams	19.0 lbs.
Recovery mass, booster	6434 grams	14.2 lbs.
Recovery mass, payload capsule	2187 grams	4.8 lbs.
Vehicle mass fraction	<b>0.544</b> (target 0.600)	

ITERATION #2						
14-Sep-09						
Item	Launch mass		Post 1st burn mass		Post 2nd burn ("dry" mass)	
	kg	lbs	kg	lbs	kg	lbs
Motor	16.265	35.857	11.015	24.283	5.591	12.325
Airframe assembly	0.576	1.270	0.576	1.270	0.576	1.270
Nosecone	0.240	0.529	0.240	0.529	0.240	0.529
Fins	0.220	0.485	0.220	0.485	0.220	0.485
Recovery system	0.364	0.802	0.364	0.802	0.364	0.802
Payload (avionics)	1.480	3.262	1.480	3.262	1.480	3.262
Misc	0.150	0.331	0.150	0.331	0.150	0.331
Total =>	19.29	42.54	14.04	30.96	8.62	19.00
<b>Mass fraction</b>	<b>0.544</b>					

ITERATION #1B						
30-Jun-07						
Item	Launch mass		Post 1st burn mass		Post 2nd burn ("dry" mass)	
	kg	lbs	kg	lbs	kg	lbs
Motor	15.740	34.700	10.408	22.945	5.076	11.190
Fairings	0.242	0.534	0.242	0.534	0.242	0.534
Nosecone	0.246	0.542	0.246	0.542	0.246	0.542
Fins	0.220	0.485	0.220	0.485	0.220	0.485
Recovery system	1.500	3.307	1.500	3.307	1.500	3.307
Payload (avionics)	1.500	3.307	1.500	3.307	1.500	3.307
Misc	0.000	0.000	0.000	0.000	0.000	0.000
Total =>	19.45	42.87	14.12	31.12	8.78	19.37
<b>Mass fraction</b>	<b>0.548</b>					