

Revised 4/28/15

PLEASE READ THIS VERY IMPORTANT INFORMATION!

- Data was produced from RockSim simulation software with 500' elevation launch site, 70% humidity, 75 deg. F, 0 mph wind, 0 deg launch rod angle.
- Aerotech motor propellants are as follows re: their suffix: J is Black Jack, W is White Lightning, T is Blue Thunder, R is Redline.
- Altitude and Optimal Delay information displayed as "feet,seconds".

EXAMPLE: AMRAAM-2.1, G75J: "2712,10.48" means 2712 feet peak altitude, 10.48 second optimum delay time

- No entry means the motor is not recommended, because it is not powerful enough, or will not physically fit the kit, etc.
- User is responsible for checking CG/CP relationship, speed off launch rod/stability, adequacy of airframe for the motor used, etc.
- All of these flights were done from a 96" launch rod and achieved 35-40fps minimum by the end of the 96" rod; if you use a shorter rod you must recheck!!!

— These are estimates/simulations only, **NOT GUARANTEES OF SUITABILITY OR PERFORMANCE**. This information is to be used at the flyer's risk and as a guideline only. It is up to the flyer to decide if the motor and kit combination is appropriate for their situation. If there are any questions about the motor, contact the motor manufacturer for assistance.

— It is our recommendation that, in most cases, a delay shown for the motor in question should be "delayed down". A shorter delay should be chosen. This is primarily due to the fact that these simulations are run under "perfect" conditions, and with a rocket weight as PML builds the kit. For example, if the chart shows a 7.1 second delay as optimum and the motor offers a 5 and 7 second delay, you might wish to choose the 5-second delay. In our experience, simulations tend to overestimate the "real-world" delay by about 10-15%. Your rocket may weigh more than the one used in the simulation, as build techniques vary and we tend to "build light". Also, actual flight conditions such as winds, temperature and humidity differences, and especially motor performance in the real world (as opposed to the "perfect" motor used by RockSim) can and WILL cause differences in your actual flight from these predictions. Remember, this information is a GUIDE, not a GOSPEL. The flyer must use their own judgement and experience, and/or the assistance of other local fliers known to have experience, whenever flying a rocket of any kind.

— **One thing that rocketeers seem to forget is that if a certain motor doesn't have a delay available that seems right, you can choose a different motor that has a delay available that's closer. There are many, many motors available, and if one combination doesn't work, don't fret over how to change the delay, pick another motor!**

1234, 56.78

Yellow means this motor/rocket combination requires modifications (strengthening). This motor is not recommended for the stock kit. Consult the *Kit Strengthening* section of our Airframes FAQ for details on what to do to strengthen the kit.

1234, 56.78

Bold type means this kit requires modifications to fit the super-long motor (usually the use of an Extended Kwik Switch and/or additional airframe length)

1234, 56.78

Yellow & **bold type** means this motor not only requires strengthening modifications but also requires special modifications to fit the super-long motor.

1234, 56.78

Blue means this motor/rocket combination requires absolutely top-notch construction to fly successfully. The stock kit can fly on this motor, but the following items **MUST** be done, and done properly, to ensure a solid and strong rocket:

- Instructions must be followed to the letter
- The directions about sanding all parts to be bonded are critical. We cannot overemphasize how much this adds to strength.
- Good, thick, quality epoxy fillets, especially on the fin to motor mount joint and the fin to airframe ID joint.
- We **STRONGLY** recommend the use of our Two-Part Adhesive Foam in the fin section; see the Adhesives website page
- Pressure relief holes should be added to the kit as described in our FAQ.
- Payload sections and nosecones should be very snug fits. "Sloppy" fits are rocket-killers under high stresses.
- A rocket that has been repaired should **NEVER** be flown on this motor combination. Only "original-strength" rockets should be used.

1234, 56.78

Blue & **bold type** means this motor not only requires the build techniques above but also requires special modifications to fit the super-long motor.

29mm Single-Use Motors	AT SU	AT SU	AT SU	AT/PML SU	AT SU	AT/PML SU	AT/PML SU	AT SU	AT SU
Motor Burn Time>	4.00 sec.	2.20 sec.	3.40 sec.	1.60 sec.	2.20 sec.	3.03 sec.	1.42 sec.	3.64 sec.	2.86 sec.
Single Use Motor	F20W	F23BM	F25W	F50T	G38BM	G40W	G80T	H55W	H70W
1/6-Scale Patriot,29	712,4.51	751,4.32	913,5.31	951,6.38		1606,7.75	2366,9.62	2811,9.7	
1/4-Scale Patriot, 29							710,5.61	1543,7.08	1560,7.58
AMRAAM-2.1, 29	1129,5.34	649, 4.77	1121,5.78	1268,7.34	1354,7.37	1990,8.29	2068,9.52	3659,10.83	3592,11.24
Ariel, 29KS							704,5.66	1601,7.44	1626,7.96
Black Brant VB, 29				837,5.93	882,5.88	1370,6.82	1479,8.20	2908,9.92	2876,10.34
Bullpuppy, 29ADPTR					729,5.29	1161,6.24	1279,7.68	2668,9.67	2630,10.06
Bullpuppy 2.1, 29	1319,6.51	978,6.08	1640,7.29	1802,8.79	1871,8.85	2695,9.73	2315,9.26	4667,12.16	4667,12.66
Bumble Bee							1207,6.75	1547,6.93	
Callisto, 29	1114,5.33		1106,5.77	1261,7.36	1346,7.39	1998,8.38	2093,9.66	3781,11.17	3713,11.58
Cirrus *, 29ADPTR	1499,6.60	849,5.69	1481,7.03	1679,8.69	1747,8.76	2678,10.07	2760,11.29	5076,13.41	4969,13.79
Delta, 29 ADPTR									1122,6.56
D Tomahawk,29 ADPTR							620,5.26	1400,6.82	1427,7.35
Explorer, 29				838,5.94	891,5.92	1375,6.86	1488,8.24	2938,10.02	2906,10.45
Gamma, 29 ADPTR							641,5.41		1551,7.90
Hydra, 29 ADPTR									1169,6.68
Intruder, 29 ADPTR									1391,7.30
Io, 29	1313,5.92	760,5.25	1300,6.35	1456,7.90	1544,7.94	2269,8.92	2325,10.09	4116,11.52	4034,11.93
Ion, 29 ADPTR							782,6.01		1827,8.57
Lil' Lunar, 29ADPTR								1208,6.42	1250,7.01
Matrix, 29 ADPTR									1304,6.97
Mini BBX, 29							819,5.27	2417,9.26	2497,9.87
Miranda, 29KS							683,5.56	1550,7.29	1576,7.81
MR-1, 29	778,7.61	584,6.73	992,8.46	1003,8.15	1333,9.76	1696,10.56	1774,10.41	4187,15.61	4107,15.22
Mystic			539,3.84	560,4.84	741,4.99	978,6.01	1590,8.12	1967,8.30	
Phantom or X-Calibur, 29ADPTR				687,5.35	727,5.30	1152,6.24	1274,7.70	2692,9.79	2664,10.20
Phobos, 29				831,5.93	884,5.90	1372,6.87	1489,8.28	2979,10.16	2948,10.59
Ptero. Jr., 29ADPTR							870,6.16	1781,7.45	1781,7.92
Quasar, 29KS							1002,6.80	2181,8.76	2185,9.24
Quicksilver	513,3.67		662,4.40	677,5.37	897,5.57	1153,6.55	1804,8.57	2199,8.71	
Sm. Endeavour,29ADPTR					738,5.33	1163,6.25	1281,7.69	2669,9.67	2636,10.08
Spitfire					653,4.62	870,5.64	1434,7.72	1784,7.90	
Stratus *, 29ADPTR	1013,5.11		1009,5.56	1192,7.32	1273,7.35	1978,8.65	2132,10.10	4214,12.55	4147,12.95
Striker							960,6.19	1178,6.14	
Tethys, 29KS								1358,6.69	1385,7.22
Tiny Pterodactyl, 29	1374,6.59	1031,6.22	1687,7.30	1820,8.70	1895,8.76	2648,9.43	2285,9.02	4432,11.51	4423,12.00
X-Calibur(see Phantom)									

*The Cirrus and Stratus are specialized super-high performance kits and should only be used by experienced high-power fliers.

Aerotech 29mm F-G: Casing & Length	29/40-120	29/40-120	29/40-120	29/60	29/40-120	29/100	29/40-120	29/180	29/100
	4.875"	4.875"	4.875"	3.9"	4.875"	4.9"	4.875"	7.6"	4.9"
Motor Burn Time>	3.50 sec.	1.70 sec.	1.58 sec.	1.00 sec.	3.50 sec.	1.70 sec.	2.00 sec.	2.20 sec.	0.90 sec.
Re-load kit	F22J	F40W	F52T	F62T	G33J	G54W	G64W	G75J	G104T
1/6 Patriot	500,3.33	1070,6.40	990,6.57	571,5.25	1393,6.60	1183,7.18	1993,8.72	2625,10.04	1250,7.73
1/4-Scale Patriot, 29									
AMRAAM-2.1, 29		1130,7.00	1093,6.85	540,5.12	1407,6.76	1073,6.74	2021,9.25	2712,10.48	1230,7.77
AMRAAM-3, 29KS									
AMRAAM-4, 29KS									
AMRAAM-4 w/CPR3k,38KS									
Ariel, 29KS									
Black Brant VB, 29		741,5.61	720,5.50			705,5.39	1423,7.84	2083,9.34	833,6.43
Black Brant X, 29KS									
Bullpuppy, 29ADPTR							1221,7.30	1847,8.89	701,5.91
Bullpuppy 2.1, 29		1606,8.41	1550,8.24	796,6.28	1971,8.28	1520,8.12	2674,10.62	3445,11.85	1716,9.15
Bumble Bee								1315,6.91	
Callisto, 29		1120,7.00	1083,6.86	529,5.08	1397,6.78	1062,6.74	2033,9.36	2765,10.69	1224,7.79
Cirrus *, 29 ADPTR		1475,8.21	1423,8.04	692,5.90	1832,8.15	1393,7.90	2657,10.96	3540,12.56	1603,9.03
D Tomahawk, 29 ADPTR							578,4.85		
Eclipse A, 29KS									
Endeavour, 29KS									
Explorer, 29						705,5.39	1429,7.88	2100,9.42	834,6.45
Hydra, 29 ADPTR									
Intruder, 29 ADPTR									
Io, 29		1297,7.53	1252,7.38	626,5.54	1614,7.34	1229,7.26	2278,9.84	3025,11.12	1402,8.30
Lil' Lunar, 29ADPTR									
Matrix, 29 ADPTR									
Mini BBX, 29									606,5.49
Miranda, 29KS									
MR-1, 29		1132,8.85	1042,8.34	556,6.24	1534,10.55	1212,8.96	2168,11.56	3003,13.46	1294,8.96
Mystic		636,4.82	590,5.04		867,5.07	695,5.48	1298,7.12	1882,8.78	757,6.09
Phantom or X-Calibur, 29ADPTR							1214,7.31	1848,8.94	694,5.90
Phobos, 29		734,5.60	713,5.48				1428,7.91	2112,9.49	828,6.43
Ptero. Jr., 29 ADPTR									
Quasar, 29KS							949,6.41	1488,7.99	
Quicksilver		768,5.37	710,5.56		1040,5.65	829,6.00	1492,7.61	2109,9.20	892,6.60
Sm. Endeavour,29ADPTR						585,4.86	1223,7.31	1849,8.90	703,5.92
Spitfire		561,4.42	521,4.71		765,4.69	616,5.14	1065,4.91	1706,8.37	674,5.75
Stratus *, 29 ADPTR		1044,6.88	1010,6.73		1311,6.70	988,6.60	2033,9.67	2905,11.48	1163,7.74
Sudden Rush, 29KS									
Striker							736,5.12	988,6.12	420,4.46
Tethys, 29KS							561,4.77		
Tiny Pterodactyl, 29	1063,5.74	1639,8.39	1583,8.23	841,6.42	2001,8.21	1555,8.12	2629,10.33	3348,11.41	1736,9.10
X-Calibur (see Phantom)									

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Aerotech 29mm H-I: Casing & Length	29/240 9.4"	29/180 7.6"	29/240 9.4"	29/240 9.4"	29/180 7.6"	29/360 13.1"
Motor Burn Time>	1.60 sec.	1.50 sec.	1.40 sec.	0.96 sec.	0.80 sec.	1.80 sec.
Re-load kit	H97J	H128W	H180W	H220T	H238T	I200W
1/6 Patriot	3052,10.81	2636,10.42	3563,11.78	3630,12.13	2793,11.03	5120,13.26
1/4-Scale Patriot, 29	1333,7.76	1067,6.90	1683,8.60	1660,8.82	1203,7.69	2719,10.36
AMRAAM-2.1, 29	3029,11.41	2640,10.66	3552,12.04	3489,12.22	2799,11.28	5034,13.49
AMRAAM-3, 29KS	1279,7.71	1009,6.78	1652,8.68	1633,8.91	1154,7.63	2797,10.79
AMRAAM-4, 29KS			872,6.25	868,6.51		1669,8.37
AMRAAM-4 w/CPR3k,38KS						1068,6.74
Ariel, 29KS	1381,8.06	1088,7.09	1788,9.09	1769,9.32	1245,7.96	3052,11.37
Black Brant VB, 29	2428,10.41	2045,9.57	2903,11.17	2855,11.36	2207,10.27	4345,12.91
Black Brant X, 29KS						1109,6.88
Bullpuppy, 29ADPTR	2218,10.08	1822,9.13	2675,10.90	2631,11.09	2010,9.93	4087,12.76
Bullpuppy 2.1, 29	3768,12.78	4049,12.94	4922,14.06	4402,13.58	3584,12.63	
Bumble Bee	1818,8.61	1551,8	2136,9.14	2238,9.62	1652,8.58	3240,10.52
Callisto, 29	3102,11.68	2700,10.87	3684,12.39	3623,12.57	2879,11.54	5294,14.01
Cirrus *, 29 ADPTR	3928,13.69	3554,12.72	4906,14.62	4837,14.80	3815,13.49	6931,16.53
Cygnus, 29 ADPTR			988,6.82	986,7.09	649,5.79	2027,9.61
Delta, 29 ADPTR	971,6.78	746,5.84	1310,7.86	1302,8.11	879,6.74	2504,10.56
D Tomahawk, 29 ADPTR	1221,7.52	962,6.61	1580,8.47	1562,8.70	1102,7.45	2691,10.56
Eclipse A, 29KS						1384,7.72
Endeavour, 29KS			1009,6.76	1003,7.02	682,5.87	1904,8.97
Explorer, 29	2450,10.49	2062,9.64	2935,11.28	2888,11.47	2228,10.35	4413,13.05
Gamma, 29 ADPTR	1315,7.97	1021,6.93	1746,9.15	1732,9.38	1184,7.86	3199,11.98
Hydra, 29 ADPTR	971,6.77	1061,7.10	1594,8.83	1295,8.07	880,6.73	2432,10.5
Intruder, 29 ADPTR	1147,7.33	1242,7.65	1811,9.31	1490,8.57	1036,7.27	2653,10.79
Io, 29	3358,12.08	2961,11.29	3983,12.75	3915,12.92	3143,11.94	5549,14.22
Ion, 29ADPTR	1537,8.53	1210,7.55	2003,9.73	1982,9.95	1384,8.45	3467,12.29
Lil' Lunar, 29ADPTR		827,6.19	1448,8.31	1437,8.56	973,7.12	>>unstable<<
Matrix, 29 ADPTR	1081,7.06	1167,7.35	1684,8.89	1393,8.22	977,7.01	2437,10.22
Mini BBX, 29	2022,9.69	2155,10.00	2885,11.52	2462,10.83	1826,9.54	3972,12.91
Miranda, 29KS	1341,7.93	1057,6.97	1735,8.94	1716,9.17	1209,7.84	2952,11.15
MR-1, 29	3447,13.96	2934,12.95	4086,14.60	4027,14.34	3151,12.98	5998,16.94
Mystic	2221,9.86	1848,9.01	2685,10.64	2758,11.03	2011,9.73	4132,12.43
Orion, 29 ADPTR	839,6.26	643,5.37	1141,7.29	1134,7.54	763,6.25	2210,9.86
Phantom or X-Calibur, 29ADPTR	2234,10.17	1825,9.18	2741,11.10	2701,11.30	2023,10.02	4319,13.22
Phobos, 29	2477,10.60	2077,9.71	2986,11.44	2939,11.63	2253,10.45	4535,13.32
Ptero. Jr., 29 ADPTR	1522,8.12	1247,7.34	1859,8.81	1818,9.00	1374,8.05	>>unstable<<
Quasar, 29KS	1837,9.25	1478,8.26	2299,10.21	2264,10.41	1657,9.11	3688,12.30
Quicksilver	2449,10.21	2062,9.41	2917,10.93	2987,11.30	2224,10.09	4378,12.58
Sm. Endeavour,29ADPTR	2220,10.09	1823,9.14	2689,10.93	2646,11.13	2012,9.94	4145,12.85
Spitfire	2030,9.46	1679,8.61	2467,10.25	2537,10.63	1835,9.34	3842,12.04
Stratus *, 29 ADPTR	3316,12.73	2877,11.67	4164,13.79	4112,13.98	3134,12.50	6390,16.26
Sudden Rush, 29KS			1360,8.01	1350,8.26	915,6.88	2554,10.66
Striker	1309,7.47	1100,6.86	1759,8.59	1815,8.98	1304,7.87	2773,10.13
Tethys, 29KS		936,6.51	1535,8.34	1517,8.57	1072,7.34	2619,10.40
Tiny Pterodactyl, 29	too long	3849,12.36	too long	too long	3427,12.13	too long
X-Calibur (see Phantom)						

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Aerotech 38mm G-H: Casing & Length	38/240 6.0"	38/360 7.9"	38/240 6.0"	38/240 6.0"	38/240 6.0"
Motor Burn Time>	3.50 sec.	3.40 sec.	2.60 sec.	1.50 sec.	1.20 sec.
Re-load kit	H73J	H112J	H123W	H148R	H242T
1/6 Patriot	2759,9.57	4533,12.06	3537,11.12	3505,11.77	3882,12.36
1/4-Scale Patriot, 38	1127,6.10	2343,9.04	1587,7.67	1608,8.41	1907,9.26
AGM256 Pit Bull, 38	2323,12.51	3720,14.56	2877,12.85	2867,12.44	3192,12.75
AMRAAM-3, 38KS	1034,5.87	2317, 9.22	1518,7.63	1564,8.45	1877,9.38
AMRAAM-4, 38KS			768,5.15	831,6.09	1021,6.92
Andromeda, ADPTR-54/38	na	na	na		
Ariel, 38KS	1117,6.19	2511,9.71	1640,8.02	1690,8.84	2033,9.82
Black Brant VB, 38	2207,8.93	3873,11.68	2828,10.38	2773,10.94	3193,11.80
Black Brant X, 38KS					630,5.43
Bullpuppy, 38	2188,8.89	3792,11.55	2788,10.31	2726,10.85	3127,11.69
Bumble Bee	1546,6.86	2759,9.17	1946,7.79	2135,9.2	2408,9.79
Callisto, 38	2955,10.36	4839,12.93	3626,11.67	3527,12.16	4014,13.02
Cirrus Dart *, 38	4180,12.64	6777,15.42	5181,14.02	5024,14.44	5649,15.38
Cygnus, ADPTR-54/38	na	na	952,5.97	1045,7.03	1284,7.96
Delta, 38	na	1764,8.08	1333,7.20	1423,8.19	1709,9.10
D Tomahawk, 38	995,5.73	2230,9.00	1463,7.46	1505,8.27	1811,9.19
Eagle, ADPTR-54/38	na	na	na	860,6.30	1060,7.17
Eclipse A, 38KS					809,6.19
Eclipse B, (2) 38	1321,6.81	2821,10.26	1885,9.61	1932,9.41	2282,10.34
Endeavour, 38KS		1450,7.14	900,5.67	963,6.60	1177,7.46
Explorer, 38	2221,8.99	3928,11.81	2854,10.48	2812,11.05	3229,11.92
Gamma, 38	na	2374,9.56	1820,8.59	1916,9.56	2273,10.51
Hydra, 38		2042,8.76	1286,7.04	1357,7.95	1645,8.91
Intruder, 38		2329,9.26	1508,7.62	1563,8.46	1871,9.38
Io, 38	3229,10.80	5196,13.30	3932,12.07	3813,12.52	4323,13.38
Ion, 38	1484,7.33	2692,10.10	2110,9.21	2194,10.12	2537,10.96
Little Lunar Express, 38		2267,9.37	1430,7.53	1566,8.61	1833,9.48
Matrix, 38		2148,8.75	1411,7.27	1456,8.08	1736,8.95
Miranda, 38KS	1088,6.08	2443,9.54	1597,7.88	1645,8.70	1979,9.67
MR-1, 38	3196,14.43	5199,17.07	4001,15.04	4000,14.65	4490,15.11
Mystic	2008,8.38	3478,10.93	2603,9.82	2632,10.59	2982,11.29
Nimbus, ADPTR-54/38		2337,9.51	1481,7.67	1550,8.57	1891,9.62
Orion, 38	na	na	1147,6.58	1232,7.58	1483,8.44
Phantom or X-Calibur, 38	2193,8.95	3965,11.93	2852,10.51	2821,11.11	3255,12.01
Phobos, 38	2234,9.06	4009,12.02	2895,10.61	2859,11.20	3294,12.10
Pterodactyl Jr., 38	1474,6.90	2620,9.12	1915,8.17	1878,8.75	2138,9.41
Quantum Leap	(SEE TWO-STAGE DATA)				
Quasar, 38KS	1554,7.47	3138,10.80	2165,9.24	2184,9.97	2560,10.88
Quicksilver	2254,8.82	3753,11.19	2854,10.17	2865,10.90	3219,11.55
Small Endeavour, 38	2190,8.90	3838,11.62	2801,10.34	2769,10.95	3155,11.75
Spitfire	1819,7.95	3207,10.50	2387,9.42	2420,10.20	2749,10.89
Stratus *, 38	3454,11.65	5937,14.88	4386,13.26	4296,13.77	4930,14.81
Sudden Rush, 38KS		1953,8.63	1216,6.86	1285,7.78	1582,8.79
Striker	656,3.92	1987,7.83	1469,7.06	1657,8.34	1957,9.15
Tethys, 38KS		2155,8.82	1414,7.31	1456,8.12	1750,9.02
Thunder & Lightning, 38	(SEE TWO-STAGE DATA)				
X-Calibur (see Phantom)					

*The Cirrus and Stratus are specialized super-high performance kits and should only be used by experienced high-power flier

Aerotech 38mm I-J Casing & Length	38/480	38/360	38/600	38/480	38/360	38/600	38/480	38/480	38/360	38/600	38/600	38/720	38/720	38/1080
	9.8"	7.9"	11.7"	9.8"	7.9"	11.7"	9.8"	9.8"	7.9"	11.7"	11.7"	13.6"	13.6"	19.2"
Motor Burn Time>	3.60 sec.	2.30 sec.	2.83 sec.	2.20 sec.	1.50 sec.	1.80 sec.	1.50 sec.	1.60 sec.	1.10 sec.	1.50 sec.	1.40 sec.	1.90 sec.	1.61 sec.	2.05 sec.
Re-load kit	I154J	I161W	I195J	I211W	I218R	I284W	I286R	I300T	I357T	I366R	I435T	J350W	J420R	J570W
1/6 Patriot	5698,11.17	5238,13.25	6466,14.19	6223,14.11	4951,13.41	6626,14.55	5818,14.34	5984,14.19	5180,13.79	6409,14.55	6398,14.48	7184,14.77	6868,14.81	8361,14.96
1/4-Scale Patriot, 38	3150,10.15	2760,10.23	3608,11.19	3591,11.42	2560,10.31	4311,12.53	3249,11.40	3566,11.74	2834,11.01	4066,12.38	4324,12.71	5083,13.18	4679,12.98	5948,13.72
AGM256 Pit Bull, 38	4888,15.92	4341,14.68	5435,16.00	5319,15.57	4113,14.08	5827,15.86	4965,15.09	5188,15.18	4365,14.15	5654,15.63	5701,15.51	6378,16.29	6087,16.07	7317,16.97
AMRAAM-3, 38KS	3206,10.59	2808,10.62	3721,11.79	3747,12.05	2614,10.70	4586,13.35	3388,11.98	3735,12.38	2915,11.46	4329,13.18	4619,13.56	5523,14.22	5050,13.93	6571,14.93
AMRAAM-4, 38KS	1907,8.02	1649,8.12	2408,9.43	2385,9.70	1557,8.33	3028,11.05	2158,9.71	2383,10.06	1782,9.10	2865,10.95	3061,11.28	3781,11.97	3422,11.71	5187,13.36
AMRAAM-4 w/CPR3k,38KS	1206,6.29	1044,6.46	1669,7.98	1680,8.34	1013,6.83	2356,10.15	1541,8.47	1711,8.78	1185,7.59	2266,10.20	2405,10.43	3121,11.42	2844,11.26	4656,13.41
Andromeda, ADPTR-54/38														
Ariel, 38KS	3472,11.19	3057,11.19	4034,12.50	4117,12.77	2848,11.25	5074,14.19	3719,12.66	4111,13.11	3188,12.07	4789,13.99	5118,14.42	6063,15.11	5594,14.82	7191,15.86
Black Brant VB, 38	4851,12.80	4418,12.83	5353,13.86	5523,14.01	4086,12.79	6064,14.75	5016,13.93	5407,14.22	4481,13.55	5856,14.65	5938,14.80	6594,15.07	6359,15.05	7541,15.61
Black Brant X, 38KS	1246,6.41	1078,6.57	1716,8.09	1727,8.46	1034,6.88	2413,10.26	1563,8.49	1758,8.89	1222,7.70	2283,10.18	2465,10.54	3195,11.54	2857,11.22	4598,13.53
Bullpuppy, 38	4737,12.61	4302,12.65	5215,13.63	5361,13.79	3977,12.63	5897,14.52	4866,13.72	5252,14.01	4353,13.36	5660,14.41	5771,14.57	6412,14.83	6126,14.77	7269,15.32
Bumble Bee	3723,10.19	3302,10.42	4149,11.10	4108,11.32	3133,10.68	4765,12.2	3823,11.56	4023,11.55	3314,11.09	4608,12.27	4681,12.28	5302,12.52	5030,12.6	
Callisto, 38	5799,14.00	5408,14.00	6131,14.83	6284,14.81	4993,13.89	6648,15.38	5841,14.84	6072,14.95	5326,14.56	6519,15.32	6474,15.39	7143,15.67	6988,15.68	8518,16.47
Cirrus Dart *, 38	7318,16.26	6986,16.08	7231,16.71	7460,16.49	6724,16.11	8718,17.86	7664,17.10	7640,17.01	6517,16.32	8873,17.90	8738,18.03	10023,18.76	9932,18.66	13048,20.26
Cygnus, ADPTR-54/38	2493,9.71	2151,9.68	3197,11.46	3205,11.80	2059,9.94	4250,13.73	2937,11.83	3230,12.21	2343,10.77	4097,13.74	4330,14.03	5496,15.25	5043,15.00	7705,17.38
Delta, 38	3106,10.71	2702,10.69	3780,12.18	3775,12.49	2575,10.92	4785,14.11	3478,12.54	3784,12.85	2855,11.63	4628,14.15	4846,14.36	5965,15.32	5527,15.16	7596,16.63
D Tomahawk, 38	3110,10.37	2719,10.42	3620,11.57	3634,11.83	2528,10.49	4452,13.12	3283,11.76	3622,12.16	2824,11.25	4200,12.95	4483,13.32	5381,13.98	4904,13.69	6432,14.71
Eagle, ADPTR-54/38	2062,8.65	1777,8.67	2686,10.36	2686,10.68	1705,8.97	3564,12.47	2463,10.74	2706,11.08	1952,9.77	3436,12.50	3628,12.75	4608,13.82	4229,13.63	6602,15.88
Eclipse A, 38KS	1573,7.33	1357,7.44	2088,8.95	2094,9.29	1292,7.70	2805,10.95	1893,9.29	2121,9.71	1506,8.52	2653,10.85	2856,11.22	3636,12.14	3266,11.82	5251,13.97
Eclipse B, (2) 38	3796,11.66	3372,11.66	4356,12.92	4471,13.18	3146,11.71	5446,14.55	4049,13.06	4459,13.51	3496,12.51	5149,14.33	5466,14.74	6300,15.26	5894,15.04	7338,15.90
Endeavour, 38KS	2181,8.67	1888,8.74	2695,10.03	2681,10.32	1778,8.92	3398,11.71	2425,10.30	2682,10.68	2025,9.71	3213,11.59	3435,11.94	4232,12.68	3830,12.39	5683,14.03
Explorer, 38	4901,12.96	4476,12.98	5412,14.03	5605,14.19	4150,12.94	6158,14.94	5097,14.09	5490,14.41	4545,13.71	5951,14.83	6034,14.99	6697,15.27	6463,15.23	7682,15.83
Gamma, 38	3967,12.22	3474,12.15	4751,13.71	4747,14.00	3306,12.35	5931,15.66	4380,14.03	4755,14.36	3641,13.09	5740,15.68	6002,15.91	7141,16.75	6710,16.65	8636,17.80
Hydra, 38	2965,10.39	2578,10.39	3657,11.99	3944,12.53	2413,10.49	4738,13.90	3197,11.91	3550,12.38	2702,11.28	4174,13.29	4846,14.25	5498,14.66	4933,14.15	6979,15.45
Intruder, 38	3216,10.63	2811,10.65	3898,12.11	4171,12.59	2625,10.74	4932,13.84	3410,12.04	3773,12.48	2922,11.50	4365,13.27	5026,14.15	5618,14.46	5099,14.03	6858,14.96
Io, 38	6143,14.35	5733,14.29	6342,15.02	6488,14.96	5285,14.16	6813,15.50	6083,15.04	6251,15.08	5542,14.75	6725,15.46	6624,15.51	7380,15.86	7236,15.86	8848,16.69
Ion, 38	4258,12.42	3750,12.40	4985,13.75	4969,14.01	3568,12.60	6048,15.45	4601,14.09	4959,14.35	3886,13.26	5863,15.48	6057,15.62	7009,16.21	6637,16.19	8253,17.01
Little Lunar Express, 38	3287,11.17	2880,11.12	3893,12.64	4002,12.95	2767,11.30	5050,14.60	3685,12.88	4011,13.32	3039,12.07	4843,14.42	5111,14.86	6222,15.83	5743,15.40	7694,16.92
Lunar Express, 38KS		599,4.71	1038,6.18	1060,6.59		1624,8.61	966,6.73	1099,7.09	726,5.95	1536,8.57	1694,8.98	2375,10.32	2077,9.92	3958,13.05
Matrix, 38	2950,9.98	2577,10.05	3523,11.30	3740,11.71	2396,10.13	4379,12.82	3069,11.27	3394,11.66	2658,10.84	3875,12.31	4449,13.11	4994,13.38	4492,12.95	
Miranda, 38KS	3374,10.97	2965,10.98	3916,12.23	3975,12.50	2761,11.05	4884,13.87	3592,12.40	3967,12.84	3085,11.84	4609,13.68	4924,14.09	5854,14.76	5380,14.48	6943,15.50
MR-1, 38	6854,18.79	6126,17.42	7428,18.95	7244,18.34	5798,16.74	7873,18.70	6811,17.84	7072,17.91	6091,16.83	7654,18.44	7741,18.35	8712,19.33	8307,19.05	
Mystic	4673,11.06	4197,12.35	5379,13.40	5330,13.59	3981,12.54	6206,14.57	4957,13.75	5294,13.89	4273,13.09	6017,14.60	6117,14.62	6872,14.80	6552,14.82	
Nimbus, ADPTR-54/38	3381,11.27	2967,11.27	4241,13.09	4137,13.15	2773,11.34	5576,15.29	3728,12.99	4140,13.49	3137,12.24	4944,14.62	5750,15.67	6497,16.15	5893,15.66	8083,16.97
Orion, 38	2745,9.97	2381,9.97	3347,11.38	3339,11.68	2205,10.20	4249,13.25	3076,11.76	3346,12.05	2515,10.20	4108,13.29	4302,13.49	5310,14.39	4918,14.26	6965,15.81
Phantom or X-Calibur, 38	4969,13.15	4553,13.16	5508,14.28	5743,14.45	4224,13.11	6335,15.25	5221,14.33	5634,14.67	4638,13.91	6126,15.12	6216,15.30	6900,15.60	6660,15.55	7969,16.20
Phobos, 38	5004,13.23	4593,13.23	5538,14.35	5776,14.51	4261,13.19	6355,15.30	5255,14.40	5662,14.73	4676,13.98	6148,15.17	6234,15.35	6915,15.65	6675,15.59	7992,16.26
Pterodactyl Jr., 38	3343,9.89	2940,10.03	3710,10.71	3650,10.89	2713,10.10	4227,11.73	3311,10.93	3598,11.16	2952,10.69	3988,11.60	4154,11.81	4706,12.02	4415,11.96	5368,12.39
Quantum Leap	(SEE TWO-STAGE DATA)													
Quasar, 38KS	4140,12.16	3715,12.16	4692,13.37	4847,13.61	3450,12.17	5786,14.88	4384,13.49	4828,13.93	3828,12.98	5494,9.40	5747,15.00	6508,15.42	6162,15.27	7486,15.99
Quicksilver	4942,11.04	4455,12.51	5647,13.52	5586,13.67	4223,12.70	6293,14.48	5203,13.85	5529,13.95	4512,13.22	6101,14.52	6164,14.51	6883,14.70	6571,14.73	7897,14.94
Small Endeavour, 38	4790,12.71	4357,12.75	5282,13.76	5444,13.92	4060,12.76	5988,14.66	4974,13.88	5333,14.14	4415,13.47	5800,14.59	5863,14.71	6513,14.98	6295,14.98	7418,15.49
Spitfire	4363,10.90	3897,11.94	5025,12.98	4980,13.18	3699,12.15	5901,14.31	4631,13.34	4949,13.48	3977,12.69	5718,14.35	5846,14.39	6620,14.63	6300,14.65	7553,14.85
Stratus *, 38	6843,16.24	6620,16.12	7107,17.04	7546,17.00	6205,15.95	7962,17.65	7220,17.04	7316,17.14	6468,16.65	8047,17.62	7836,17.71	8772,18.21	8719,18.13	
Sudden Rush, 38KS	2939,10.49	2551,10.45	3549,12.01	3613,12.32	2383,10.54	4630,14.03	3253,12.19	3627,12.70	2711,11.43	4368,13.83	4697,14.29	5796,15.32	5248,14.88	7454,16.69
Striker	3169,9.80	2777,9.92	3654,10.83	3572,10.98	2680,10.28	4241,11.97	3359,11.27	3577,11.36	2872,10.75	4152,12.13	4283,12.21	5059,12.65	4758,12.70	5946,13.19
Tethys, 38KS	3020,10.19	2637,10.24	3528,11.38	3534,11.64	2453,10.32	4335,12.92	3193,11.58	3522,11.98	2741,11.08	4089,12.76	4365,13.13	5256,13.79	4779,13.49	6320,14.54
Thunder & Lightning, 38	(SEE TWO-STAGE DATA)													
X-Calibur (see Phantom)	(SEE TWO-STAGE DATA)													

*The Cirrus and Stratus are specialized super-high performance kits and should only be used by experienced high-power fliers.

Aerotech 54mm J-K Casing & Length	54/852 9.5"	54/852 9.5"	54/852 9.5"	54/852 9.5"	54/852 9.5"	54/1280 12.8"	54/1280 12.8"	54/1280 12.8"	54/1280 12.8"	54/1706 16.1"	54/1706 16.1"	54/1706 16.1"	54/1706 16.1"	54/2560 22.8"	54/2560 22.8"
	Motor Burn Time>	7.50 sec.	4.50 sec.	3.20 sec.	2.46 sec.	1.90 sec.	7.00 sec.	3.50 sec.	2.25 sec.	1.60 sec.	7.50 sec.	3.50 sec.	2.25 sec.	1.60 sec.	2.00 sec
Re-load kit	J90W	J180T	J275W	J315R	J460T	J135W	J415W	J540R	J800T	K185W	K550W	K695R	K1100T	K1275R	K700W
1/2-Scale Patriot, 54		1282,5.59	1271,6.72	1144,6.70	1365,7.73	1765,5.77	2327,9.12	2252,9.65	2620,10.74	2784, 7.56	3349,10.84	3043,11.11	3455,12.20	4345,13.00	4810,12.62
AGM600 Pit Bull, 54		1741,6.82	1715,7.91	1542,7.88	1794,8.84	2398,7.12	2885,10.09	2778,10.65	3105,11.48	3329,7.97	3903,11.50	3618,11.97	3944,12.74	4952,13.67	5387,13.06
AMRAAM-3, 54KS	6104,11.49	6558,13.55	6249,14.39	5753,14.23	6022,14.90	8180,13.76	7583,15.26	6982,15.30	6891,15.70	9356,14.42	8251,15.66	7589,15.84	7667,16.40	8714,16.85	9344,16.30
AMRAAM-4, 54KS	4033,8.94	4465,11.11	4328,12.09	3927,11.92	4290,12.78	5738,11.28	5934,13.51	5426,13.58	5612,14.18	7158,12.33	6740,14.03	6095,14.18	6125,14.68	6833,14.88	7590,14.51
AMRAAM-4 wCPR3k, 54KS		3643,10.54	3552,11.56	3253,11.51	3580,12.34	4820,10.95	5263,13.55	5040,14.03	5474,14.81	6311,12.37	6687,14.88	6178,15.25	6455,15.83		
Andromeda, 54	na														
Ariel, 54KS	6738,12.43	7257,14.56	6854,15.31	6358,15.17	6611,15.82	8898,14.75	8261,16.22	7688,16.30	7598,16.70	10099,15.42	8983,16.65	8405,16.91	8532,17.51	9767,18.08	10437,17.52
Aurora, 54	4012,9.72	4768,12.47	4648,13.47	4175,13.15	4686,14.26	6303,13.12	6860,15.80	6417,15.94	6947,16.89	8215,14.80	8258,16.94	75,481,7.02	7801,17.71	8709,18.05	9487,17.68
Black Brant X, 54KS		3790,10.72	3692,11.73	3323,11.51	3718,12.51	5001,11.12	5431,13.69	5073,13.90	5619,14.91	6515,12.52	6808,14.93	6144,15.02	6446,15.75	7199,16.00	7976,15.68
Bulldog, 54		2259,8.19	2224,9.28	1970,9.07	2320,10.23	3146,8.77	3690,11.74	3495,12.12	3994,13.23	4409,10.49	5018,13.44	4556,13.63	5098,14.73	6227,15.58	6969,15.36
Cygnus, 54	5986,12.23	6776,14.77	6582,15.72	6080,15.61	6558,16.44	8745,15.44	8731,17.45	8202,17.69	8386,18.16	10474,16.56	9854,18.18	9083,18.43	9322,18.96	10525,19.63	11374,19.07
Eagle, 54		5664,13.21	5505,14.19	5085,14.13	5490,14.91	7322,13.69	7553,15.96	7100,16.25	7291,16.72	9114,15.00	8632,16.69	7940,16.98	8063,17.42	9050,17.94	9843,17.38
Eclipse A, 54KS		4306,11.34	4189,12.34	3780,12.11	4193,13.08	5622,11.70	5990,14.15	5572,14.71	5976,15.14	7194,13.01	7149,15.06	6494,15.19	6649,15.79	7447,16.06	8170,15.66
Endeavour, 54KS	4526,9.67	4999,11.86	4844,12.83	4395,12.63	4801,13.52	6412,12.10	6510,14.22	5953,14.27	6071,14.81	7943,13.20	7260,14.68	6623,14.85	6594,15.31	7430,15.61	8130,15.17
Lunar Express, 54		2867,9.58	2805,10.62	2496,10.36	2885,11.52	3926,10.23	4573,13.28	4331,13.62	4946,14.83	5480,12.16	6199,15.19	5626,15.29	6305,16.50	7482,17.28	8291,17.06
Miranda, 54KS	6415,12.08	6951,14.23	6612,15.04	6092,14.86	6392,15.56	8617,14.47	8030,15.97	7447,16.04	7351,16.43	9825,15.15	8745,16.40	8119,16.62	8231,17.21	9392,17.72	10044,17.17
Nimbus, 54	7290,13.24	7780,15.35	7364,16.08	6863,15.94	7112,16.58	9471,15.56	8837,17.02	8225,17.08	8264,17.59	10698,16.26	9605,17.49	9018,17.75	9280,18.45	10501,18.99	11378,18.55
Pterodactyl, 54		1576,6.29	1553,7.39	1380,7.30	1624,8.30	2165,6.50	2613,9.40	2464,9.82	2803,10.75		3522,10.68	3195,11.00	3552,11.91	4339,12.50	4846,12.10
Quantum Leap	(SEE TWO-STAGE DATA)														
Quasar, 54KS	7790,13.28	7851,14.93	7351,15.61	6975,15.61	7021,16.07	9514,15.08	8671,16.42	8059,16.47	8134,17.03	10679,15.74	9513,16.96	8922,17.21	8952,17.25	10403,18.47	11254,17.99
Sudden Rush, 54KS	6141,12.28	6854,14.70	6658,15.65	6015,15.29	6566,16.29	8749,15.27	8454,16.99	7859,17.05	7924,17.55	10140,16.13	9311,17.51	8635,17.70	8795,18.31	9944,18.81	10686,18.32
Tempest, 54HR	6403,12.35	7040,14.65	6775,15.53	6181,15.26	6603,16.09	8825,15.04	8357,16.62	7772,16.70	7743,17.13	10108,15.79	9143,17.10	8497,17.31	8652,17.92	9831,18.45	10539,17.92
Tethys, 54KS	5785,11.01	6217,13.05	5967,13.95	5457,13.77	5760,14.48	7838,13.30	7296,14.82	6743,14.92	6624,15.28	9018,13.96	7951,15.21	7365,15.46	7318,15.92	8461,16.44	8815,15.72
Ultimate Endeavour **		1853,7.10	1825,8.20	1622,8.07	1907,9.13	3060,10.42	2898,10.83	3305,11.85			4156,11.91	3774,12.17	4210,13.17	5162,13.90	5759,13.57

** Note: Ultimate Endeavour flights shown on single 54mm motor only. RockSim 4.0 does not allow central 54mm surrounded by (3) 38's.

AnimalWorks 54mm	J357WW	J370GG	J400RR	J450ST	J480BB	K350GG	K475WW	K560RR	K570WW	K650RR	K670GG	K700BB	K800BB	K950ST	K975WW	K1000SK	K1075GG	L1100RR	L1300BB
1/2-Scale Patriot, 54		1793,8.55	1986,9.12	1952,9.16	2199,9.63	2721,10.57	2740,10.39	2922,10.96	3432,11.40	3721,12.08	3501,11.97	3312,11.63	3990,12.55	3815,12.53	4866,13.60	4102,12.80	4712,13.69	5113,13.95	5289,14.26
AGM-600 PitBull, 54	2192,9.44	2310,9.68	2520,10.22	2461,10.22	2730,10.64	3288,11.49	3317,11.32	3505,11.86	4046,12.23	4349,12.86	4108,12.77	3902,12.44	4611,13.27	4418,13.27	5520,14.26	4709,13.53	5348,14.36	5752,14.56	5870,14.78
AMRAAM-3, 54KS	6854,15.50	6900,15.52	7155,15.84	6923,15.76	7250,15.90	7855,16.48	7951,16.24	8107,16.69	8661,16.75	8798,17.03	8528,17.11	8063,16.48	8843,17.12	8587,17.25	9980,18.31	9137,18.00	9777,18.50	10193,18.49	10236,18.61
AMRAAM-4, 54KS	4895,13.19	4993,13.28	5288,13.70	5153,13.68	5512,13.92	6105,14.48	6191,14.28	6342,14.71	6859,14.77	7000,15.07	6750,15.13	6416,14.65	6978,15.12	6732,15.20	7681,15.88	7155,15.71	7518,16.06	7794,16.01	7796,16.11
AMRAAM-4 wCPR3k, 54KS	4247,13.07	4387,13.25	4710,13.78	4596,13.76	5018,14.18	5808,15.04	5883,14.86	6148,15.42	6869,15.74	7170,16.22	6858,16.18	6571,15.78	7309,16.42	7055,16.45	8129,17.20	7427,16.83	7945,17.35	8281,17.37	8279,17.46
Andromeda, 54	4793,13.89	4947,14.08	5312,14.63	5186,14.61	5659,15.05	6526,15.95	6617,15.79	6872,16.32	7597,16.61	7888,17.06	7564,17.03	7252,16.60	8010,17.23	7742,17.27	8878,18.06	8148,17.70	8683,18.21	9035,18.22	9076,18.36
Ariel, 54KS	7541,16.51	7588,16.52	7874,16.87	7627,16.98	7981,16.92	8643,17.55	8744,17.31	8924,17.79	9547,17.90	9778,18.23	9466,18.29	8979,17.64	9883,18.36	9599,18.48	11173,19.67	10190,19.28	10937,19.84	11432,19.87	11507,20.00
Aurora, 54	5412,14.88	5586,15.08	5997,15.67	5857,15.64	6391,16.12	7293,17.02	7392,16.85	7642,17.37	8365,17.63	8639,18.05	8307,18.02	7970,17.57	8733,18.19	8455,18.23	9628,19.05	8897,18.71	9435,19.21	9824,19.24	9896,19.39
Black Brant X, 54KS	4313,13.02	4445,13.19	4765,13.70	4650,13.68	5065,14.08	5835,14.89	5912,14.72	6163,15.26	6836,15.51	7095,15.95	6802,15.93	6512,15.52	7193,16.10	6945,16.14	7957,18.84	7319,16.54	7781,17.00	8087,16.99	8066,17.07
Bulldog, 54	2776,10.83	2908,11.07	3170,11.65	3099,11.65	3442,12.14	4137,13.13	4178,12.95	4418,13.55	5100,14.03	5489,14.73	5172,14.58	4936,14.22	5825,15.20	5587,15.17	6883,16.28	5930,15.48	6689,16.37	7123,16.56	7219,16.75
Cygnus, 54	7623,17.34	7750,17.43	8133,17.90	7910,17.81	8369,18.09	9134,18.78	9241,18.56	9454,19.05	10129,19.20	10364,19.55	10020,19.57	9566,18.98	10499,19.71	10197,19.79	11808,20.95	10737,20.46	11559,21.10	12107,21.19	12228,21.35
Eagle, 54	6454,15.76	6597,15.88	6971,16.36	6781,16.29	7220,16.59	7937,17.24	8039,17.04	8233,17.51	8859,17.64	9043,17.96	8742,18.00	8338,17.46	9063,18.04	8794,18.12	10135,19.09	9291,18.72	9932,19.26	10369,19.30	10448,19.44
Eclipse A, 54KS	4825,13.57	4953,13.72	5286,14.21	5156,14.18	5589,14.55	6337,15.29	6423,15.11	6627,15.58	7240,15.74	7457,16.12	7173,16.13	6855,15.69	7507,16.22	7253,16.28	8284,17.01	7663,16.75	8103,17.17	8411,17.14	8433,17.26
Endeavour, 54KS	5461,13.97	5571,14.07	5881,14.49	5716,14.44	6077,14.66	6679,15.22	6769,15.02	6927,15.46	7462,15.52	7604,15.81	7343,15.87	7976,15.36	7573,15.85	7316,15.94	8394,16.73	7785,16.52	8230,16.92	8558,16.89	8586,17.00
Lunar Express, 54	3444,12.20	3599,12.46	3927,13.10	3838,13.09	4265,13.65	5100,14.73	5162,14.58	5452,15.20	6281,15.79	6770,16.55	6373,16.35	6096,15.96	7146,17.02	6866,16.98	8215,18.05	7242,17.32	8000,18.14	8454,18.31	8539,18.48
Miranda, 54KS	7268,16.20	7323,16.22	7602,16.57	7364,16.48	7717,16.64	8364,17.25	8462,17.01	8635,17.48	9222,17.56	9418,17.87	9119,17.94	8649,17.30	9501,17.99	9228,18.11	10728,19.24	9796,18.87	10504,19.42	10968,17.44	11035,19.57
Nimbus, 54	8092,17.31	8141,17.32	8435,17.67	8176,17.58	8546,17.74	9238,18.39	9335,18.13	9545,18.64	10218,18.78	10487,19.13	10148,19.19	9645,18.51	10617,19.29	10317,19.39					

Cesaroni 38mm	G79SS	133G69	H143SS	244H153	384I205	I212SS	512I285	I287SS	I350SS	I540WT	J285	J330	J400SS
1/6 Patriot	2016,9.34	2182,9.45	3900.98	4235,12.11	5727,14.03	5426,13.99	6481,14.59	6299,14.81	6844,14.98	6643,14.08	6470,14.57	7720,15.45	7272,15.46
1/4-Scale Patriot, 38			1900,9.08	2014,9.19	3009,10.84	2865,10.83	3836,11.81	3696,11.98	4335,12.80	4571,13.11	4667,12.49	5186,12.97	4857,12.98
AGM256 Pit Bull, 38	1608,10.15	1701,10.44	3216,13.20	3489,13.48	4831,15.13	4585,14.15	5650,15.83	5551,15.77	6037,16.20	5895,15.71	6369,15.63	6810,16.96	6403,16.56
AMRAAM-3, 38KS		696,5.40	1870,9.20	2060,9.54	3196,11.57	2946,11.29	4179,12.80	3889,12.66	4611,13.61	4950,14.06	5159,13.68	5794,14.30	5284,14.01
AMRAAM-4, 38KS			1012,6.74	1127,7.05	1985,9.25	1808,8.95	2729,10.54	2528,10.39	3085,11.32	3359,11.87	3468,11.42	4005,12.08	3650,11.91
AMRAAM-4 w/CPR3k,38KS						1338,7.80	1207,7.49	2093,9.64	1899,9.37	2474,10.62	2791,11.42	2839,10.89	3419,11.83
Andromeda, ADPTR-54/38				775,5.88	1521,8.35	1370,8.01	2349,10.23	2136,9.96	2761,11.23	3125,12.08	3179,11.55	3830,12.55	3462,12.30
Ariel, 38KS		751,5.65	2026,9.65	2228,10.00	3501,12.21	3215,11.89	4614,13.59	4280,13.41	5095,14.45	5483,14.94	5728,14.59	6395,15.22	5840,14.89
Black Brant VB, 38	1470,8.22	1554,8.21	3184,11.61	3420,11.84	4837,13.55	4504,13.36	5820,14.42	5554,14.48	6234,15.26	6178,15.13	6641,14.92	7104,15.31	6420,14.83
Black Brant X, 38KS				693,5.50	1364,7.85	1231,7.53	2118,9.64	1923,9.38	2493,10.59	2807,11.38	2857,10.85	3433,11.77	3106,11.56
Bullpuppy, 38	1454,8.17	1537,8.16	3121,11.50	3343,11.71	4695,13.35	4380,13.17	5633,14.18	5384,14.25	6025,14.99	5943,14.85	6407,14.64	6838,15.00	6181,14.56
Bumble Bee	997,6.45	1093,6.53	2217,9.08	2518,9.64	3549,10.95	3311,10.84	4509,11.95	4428,11.93	4914,12.36	4854,12.69	5220,12.31	5634,12.72	5301,12.81
Callisto, 38	2065,9.69	2185,9.68	4005,12.81	4271,13.00	5730,14.51	5435,14.44	6532,15.11	6326,15.30	6997,16.08	6823,15.77	7334,15.57	7814,15.98	7015,15.37
Cirrus Dart *, 38	3073,11.79	3247,11.82	5665,5.18	6023,15.36	7501,16.66	7205,16.69	8771,17.59	8369,17.72	9502,18.91	9780,18.76	10309,18.55	11383,19.36	10025,18.27
Cygnus, ADPTR-54/38			1288,7.85	1451,8.27	2669,11.19	2411,10.75	3859,13.19	3516,12.83	4407,14.22	4965,15.15	5084,14.68	6007,15.77	5450,15.40
Delta, 38			1730,9.03	1925,9.44	3230,12.02	2944,11.63	4421,13.68	4068,13.41	4937,14.60	5443,15.32	5614,14.90	6456,15.76	5884,15.31
D Tomahawk, 38		668,5.27	1800,9.01	1982,9.34	3094,11.35	2852,11.08	4052,12.57	3772,12.44	4476,13.37	4812,13.84	5008,13.44	5643,14.06	5143,13.78
Eagle, ADPTR-54/38			1060,7.05	1193,7.42	2225,10.13	2006,9.73	3231,11.96	2953,11.67	3711,12.95	4160,13.78	4259,13.31	5035,14.29	4568,13.99
Eclipse A, 38KS			794, 6.00	894,6.31	1684,8.69	1524,8.36	2490,10.35	2284,10.14	2879,11.25	3209,11.98	3283,11.49	3885,12.33	3526,12.13
Eclipse B, (2) 38	853,6.28	900,6.23	2287,10.18	2496,10.51	3836,12.64	3532,12.34	4981,13.95	4631,13.79	5470,14.81	5763,15.15	6071,14.85	6668,15.38	6090,15.03
Endeavour, 38KS			1170,7.29	1301,7.60	2241,9.84	2058,9.56	3066,11.18	2937,11.01	3451,11.98	3761,12.55	3885,12.10	4480,12.80	4079,12.59
Explorer, 38	1487,8.29	1571,8.27	3231,11.73	3471,11.97	4916,13.71	4576,13.51	5914,14.59	5643,14.65	6333,15.44	6282,15.31	6749,15.10	7219,15.50	6527,15.02
Gamma, 38		835,6.04	2310,10.47	2548,10.88	4111,13.52	3748,13.09	5512,15.22	5076,14.93	6090,16.18	6585,16.76	6873,16.45	7637,17.14	6995,16.75
Hydra, 38			1644,8.75	1826,9.13	2989,11.46	2743,11.13	4005,12.87	3708,12.68	4458,13.72	4855,14.31	5020,13.89	5750,14.65	5236,14.35
Intruder, 38			1872,9.22	2061,9.57	2960,11.34	4213,12.89	3918,12.74	4652,13.70	5002,14.14	5209,13.79	5854,14.41	6340,14.12	
Io, 38	2285,10.12	2413,10.12	4312,13.17	4589,13.34	5987,14.70	5718,14.69	6750,15.26	6564,15.49	7247,16.29	7080,15.96	7565,15.73	8120,16.20	7263,15.52
Ion, 38	966,6.75	1020,6.71	2585,10.93	2828,11.30	4360,13.63	4003,13.28	5681,15.09	5265,14.88	6204,15.99	6494,16.30	6842,16.02	7467,16.56	6832,16.17
Little Lunar Express, 38			1898,9.47	2111,9.89	3444,12.38	3147,12.00	4642,13.98	4282,13.72	5156,14.88	5647,15.54	5842,15.14	6633,15.92	6061,15.58
Lunar Express, 38KS							1368,7.89	1230,7.63	1726,9.07	2046,10.10	2026,9.44	2599,10.68	2320,10.43
Matrix, 38			1736,8.79	1903,9.08	2906,10.90	2691,10.67	3750,11.96	3507,11.87	4133,12.71	4408,13.11	4597,12.71	5173,13.27	4711,13.03
Miranda, 38KS		731,5.56	1970,9.49	2169,9.84	3386,11.97	3115,11.67	4445,13.29	4129,13.13	4905,14.13	5274,14.61	5503,14.24	6157,14.56	5620,14.55
MR-1, 38	2238,11.84	2370,12.16	4505,15.55	4918,15.94	6665,17.84	6390,17.58	7644,18.62	7534,18.58	8181,19.12	8158,18.73	8586,13.81	9327,20.13	8761,19.66
Mystic	1366,7.88	1446,7.86	3004,11.11	3287,11.53	4759,13.35	4410,13.13	5949,14.45	5584,14.40	6455,14.95	6311,14.07	6831,14.95	7323,15.41	6885,15.39
Nimbus, ADPTR-54/38			1882,9.44	2093,9.86	3473,12.47	3162,12.06	4728,14.16	4350,13.88	5264,15.09	5798,15.80	5988,15.40	6828,16.24	6236,15.88
Orion, 38			1499,8.37	1670,8.75	2847,11.25	2596,10.88	3916,12.83	3608,12.60	4395,13.73	4839,14.41	4989,13.98	5769,14.83	5247,15.41
Phantom or X-Calibur, 38	1463,8.23	1546,8.22	3253,11.82	3506,12.08	5025,13.94	4665,13.71	6080,14.88	5794,14.92	6511,15.73	6478,15.62	6944,15.41	7430,15.82	6726,15.33
Phobos, 38	1490,8.32	1576,8.31	3294,11.91	3547,12.17	5063,14.01	4703,13.78	6104,14.93	5822,14.98	6534,15.78	6491,15.67	6961,15.46	7443,15.86	6738,15.38
Pterodactyl Jr., 38	984,6.55	1035,6.48	2144,9.25	2286,9.38	3194,10.63	2995,10.53	3918,11.33	3704,11.38	4256,12.05	4272,12.06	4617,11.79	4995,12.11	4507,11.83
Quantum Leap	(SEE TWO-STAGE DATA)												
Quasar, 38KS	1003,6.83	1059,6.79	2555,10.71	2777,11.02	4174,13.08	3853,12.79	5349,14.33	4984,14.19	5820,15.18	6015,15.37	6372,15.10	6926,15.58	6318,15.20
Quicksilver	1563,8.37	1649,8.34	3243,11.35	3535,11.77	5012,13.46	4659,13.27	6083,14.37	5802,14.45	6519,14.82	6323,14.01	6874,14.78	7341,15.23	6913,15.23
Small Endeavour, 38	1475,8.24	1558,8.22	3175,11.60	3405,11.82	4799,13.51	4471,13.32	5765,14.36	5505,14.42	6174,15.19	6113,15.06	6576,14.85	7034,15.23	6356,14.77
Spitfire	1233,7.5	1303,7.46	2769,10.72	3036,11.13	4434,12.95	4108,12.73	5601,14.06	5229,13.99	6170,14.64	6081,13.94	6556,14.66	7055,15.12	6616,15.09
Stratus *, 38	2418,10.69	2563,10.74	4910,14.57	5284,14.87	7080,16.67	6722,16.57	8046,17.40	7800,17.57	8610,18.46	8562,18.23	9043,17.99	9762,18.57	8784,17.82
Sudden Rush, 38KS		1568,8.61	1751,9.01	3006,11.65	2737,11.26	4160,13.35	3821,13.07	4669,14.28	5166,15.03	5321,14.60	6168,15.51	5607,15.16	
Striker	783,5.85	860,5.93	1754,8.37	2096,9.14	3188,10.88	2933,10.65	3962,11.66	3786,11.78	4496,12.28	4641,12.82	4863,12.38	5394,12.88	5003,12.85
Tethys, 38KS		644,5.16	1740,8.84	1914,9.16	3005,11.17	2768,10.90	3943,12.38	3669,12.25	4362,13.18	4693,13.64	4879,13.24	5518,13.87	5025,13.60
Thunder & Lightning, 38	(SEE TWO-STAGE DATA)												
X-Calibur (see Phantom)													

*The Cirrus and Stratus are specialized super-high performance kits and should only be used by experienced high-power fliers.

Cesaroni Pro54	J210	J280SS	J295	J380SS	K445	K530SS	K570	K650SS	K660	L730
1/2-Scale Patriot, 54			2284,8.75		3416,10.87	2767,10.63	4354,12.13	3509,11.82	5085,12.85	5668,13.41
AGM600 PitBull, 54	1748,7.59	1358,7.56	2870,9.76	2361,9.88	4064,11.38	3346,11.57	5054,12.60	4123,12.64	5781,13.52	6380,14.03
AMRAAM-3, 54KS	6584,14.68	5384,14.10	7934,15.16	6792,15.29	8752,12.15	7683,16.00	9393,16.29	8299,16.51	10075,16.66	10801,17.21
AMRAAM-4, 54KS	4425,12.00	3651,11.78	5915,13.13	4994,13.24	7004,14.10	6059,14.22	7628,14.53	6658,14.72	8056,14.72	8525,15.08
AMRAAM-4 wCPR3k, 54KS	3595,11.40	2957,11.21	5331,13.41	4430,13.31	6980,15.17	5853,14.95	7948,15.93	6813,15.88	8522,16.22	9037,16.58
Andromeda, 54	4030,12.15	3318,11.90	5893,14.29	4963,14.12	7724,16.04	6539,15.84	8686,16.76	7501,16.72	9282,17.06	9831,17.45
Ariel, 54KS	7296,15.71	5957,15.01	8686,16.17	7468,16.27	9588,16.90	8444,17.04	10438,17.49	9198,17.64	11289,17.96	12125,18.57
Aurora, 54	4610,13.13	3800,12.80	6596,15.37	5637,15.13	8515,17.01	7306,16.86	9427,17.66	8227,17.65	10010,17.94	10573,18.34
Black Brant X, 54KS	3681,11.42	3034,11.25	5384,13.30	4485,13.24	6959,14.94	5872,14.89	7827,15.59	6752,15.61	8346,15.84	8837,16.19
Bulldog, 54	2130,8.72	1737,8.69	3632,11.36	2958,11.21	5122,13.50	4201,13.16	6353,14.81	5178,14.39	7263,15.54	7860,15.99
Cygnus, 54	6788,15.88	5589,15.27	9024,17.46	7692,17.35	10259,18.45	9026,18.47	11143,19.04	9842,19.11	12039,19.53	12905,20.14
Eagle, 54	5681,14.29	4685,13.85	7786,15.94	6566,15.84	9005,16.96	7866,16.99	9783,17.49	8622,17.60	10357,17.77	11049,18.27
Eclipse A, 54KS	4207,12.10	3474,11.88	5948,13.75	4983,13.73	7380,15.12	6332,15.10	8157,15.67	7096,15.76	8660,15.90	9163,16.27
Endeavour, 54KS	4958,12.79	4087,12.48	6592,13.94	5565,14.00	7600,14.79	6610,14.92	8244,15.23	7223,15.42	8699,15.45	9203,15.84
Lunar Express, 54	2711,10.10	2203,9.92	4506,12.89	3661,12.60	6331,15.25	5183,14.76	7801,16.68	6371,16.13	8644,17.26	9257,17.70
Miranda, 54KS	6949,15.32	5688,14.69	8410,15.90	7216,16.00	9301,16.62	8185,16.77	10044,17.14	8875,17.32	10838,17.57	11630,18.16
Nimbus, 54	7901,16.58	6445,15.78	9273,16.97	8004,17.06	10194,17.71	9015,17.84	11199,18.41	9853,18.51	12121,18.91	13017,19.56
Pterodactyl, 54			2573,9.07	2091,9.10	3591,10.74	2965,10.66	4425,11.72	3637,11.60	5066,12.26	5584,12.71
Quantum Leap	(SEE TWO-STAGE DATA)									
Quasar, 54KS	8245,16.50	6643,15.57	9220,16.43	7950,16.56	10064,17.13	8917,17.32	11185,17.90	9794,18.02	12105,18.41	13027,19.10
Sudden Rush, 54KS	6748,15.59	5556,15.01	8722,16.85	7459,16.82	9799,17.71	8633,17.79	10574,18.23	9368,18.37	11382,18.67	12191,19.25
Tempest, 54HR	6980,15.64	5732,15.02	8694,16.53	7459,16.57	9681,17.32	8531,17.43	10469,17.86	9258,18.01	11299,18.31	12117,18.91
Tethys, 54KS	6240,14.17	5101,13.64	7643,14.74	6524,14.88	8498,15.44	7439,15.61	9152,15.91	8053,16.11	9802,16.25	10514,16.79
Ultimate Endeavour **			3017,10.07	2458,10.04	4239,11.96	3490,11.77	5249,13.10	4296,12.85	6027,13.75	6642,14.26
** Note: Ultimate Endeavour flights shown on single 54mm motor only. RockSim 4.0 does not allow central 54mm surrounded by (3) 38's.										

Hypertek 54mm: Overall Length	HT 645mm	HT 622mm	HT 645mm	HT 614mm	HT 614mm	HT 622mm	HT 645mm	HT 614mm	HT 645mm	HT 614mm	HT 622mm	HT 645mm	HT 645mm	HT 614mm
Motor Burn Time>	2.23 sec.	5.30 sec.	6.92 sec.	6.69 sec.	6.92 sec.	3.70 sec.	5.74 sec.	4.77 sec.	4.48 sec.	4.92 sec.	2.70 sec.	3.67 sec.	2.89 sec.	3.31 sec.
Designation	I310	J100	J110	J115	J120	J145	J150	J170	J175	J190	J205	J220	J250	J270
Andromeda, 54	2471,10.26	2968,9.72	na	2572,7.50	3090,8.35	2989,10.52	3055,9.33	3024,9.60	2859,9.80	3652,10.55	2857,10.81	2999,10.47	3121,10.72	3509,11.37
Cygnus, 54	4176,13.50	5103,13.29	4892,11.81	4568,11.09	5324,11.96	5020,13.96	5233,12.88	5106,13.05	4883,13.26	6070,14.13	4773,14.17	5059,13.92	5214,14.16	5788,14.85
Eagle, 54	3544,12.28	4332,11.97	na	3874,9.84	4503,10.59	4259,12.64	4424,11.52	4318,11.70	4132,11.95	5124,12.66	4053,12.88	4279,12.57	4411,12.79	4888,13.41
Nimbus, 54	5032,14.53	6171,14.39	5982,12.95	5610,12.26	6411,12.99	6127,15.22	6286,13.90	6103,14.04	5880,14.30	7098,14.94	5813,15.41	6020,14.87	6157,15.06	6742,15.65

2-Stage Kits	Aerotech Motors
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There are hundreds of variations of booster and sustainer motor combinations. Obviously, showing all of them is impossible.

Here are a few selected Aerotech motor combinations as examples of potential performance. All of these were flown with a zero-sec delay time between booster burnout and sustainer ignition. Actual performance may be greater by delaying ignition of the sustainer allowing coast time before sustainer ignition. We recommend you purchase RockSim and obtain the RockSim files for the kits below from PML to try out the various combinations of delays after booster burnout to obtain best results for your project.

Kit & MMT	Booster	Sustainer	Time to Apogee	Alt., Delay
MiniBBX/Terrier	H123W-0	G80T	13.99	2610, 8.82
MiniBBX/Terrier	H242T-0	H128W	15.04	3989, 12.54
MiniBBX/Terrier	I161W-0	H180W	17.36	5264, 13.89
MiniBBX/Terrier	I284W-0	I200W	18.53	7170, 15.19
MiniBBXw/CPR/Terrier	H123W-0	G80T	13.16	2145, 8.00
MiniBBXw/CPR/Terrier	H242T-0	H128W	14.81	3622, 12.31
MiniBBXw/CPR/Terrier	I161W-0	H180W	17.41	4927, 13.93
MiniBBXw/CPR/Terrier	I284W-0	I200W	19.29	7330, 15.96
Quantum Leap, 54KS	J275-0	J135W	24.38	10588, 14.18
Quantum Leap, 54KS	J415W-0	J275W	21.88	9455, 15.18
Quantum Leap, 54KS	K550W-0	K185W	26.08	13474, 15.08
Quantum Leap, 38KS	I161W-0	H123W	15.14	3300, 10.24
Quantum Leap, 38KS	I284W-0	I161W	17.07	5328, 12.97
Quantum Leap, 38KS	J350W-0	J350	18.65	7168, 14.85
Quantum Leap II, 54KS	J275-0	J135W	24.29	10488, 14.09
Quantum Leap II, 54KS	J415W-0	J275W	21.32	9333, 15.09
Quantum Leap II, 54KS	K550W-0	K185W	25.57	13073, 14.97
Quantum Leap II, 38KS	I161W-0	H123W	15.05	3246, 10.15
Quantum Leap II, 38KS	I284W-0	I161W	17.00	5418, 13.00
Quantum Leap II, 38KS	J350W-0	J350	18.4	7071, 14.84
Quantum Leap 3000, 54KS	J275-0	J135W	25.13	10389, 14.93
Quantum Leap 3000, 54KS	J415W-0	J275W	22.42	9564, 16.19
Quantum Leap 3000, 54KS	K550W-0	K185W	26.5	13183, 15.90
Quantum Leap 3000, 38KS	I161W-0	H123W	14.13	2587, 9.22
Quantum Leap 3000, 38KS	I284W-0	I161W	17.07	4980, 13.07
Quantum Leap 3000, 38KS	J350W-0	J350	19.41	7281, 15.85
Thunder & Lightning, 38	I161W-0	H123W	16.33	4013, 11.43
Thunder & Lightning, 38	I284W-0	I161W	18.55	6475, 14.44
Thunder & Lightning, 38	J350W-0	J350W	19.92	8219, 16.11